MODEL AIRPLANE NEWS

NOVEMBER 1948

25 CENTS

CO2 Powered Flyingboat

(See Page 35)

COMPLETE REPORT OF 17th NATIONALS!

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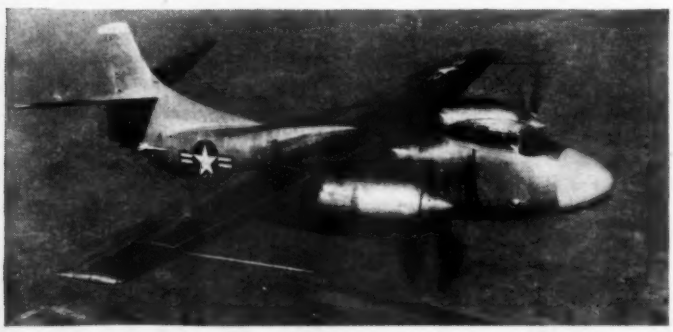
TWO NEW aircraft have made their first test flights successfully—one Air Force, the other Navy. The new AF plane is the secret Northrop XF-89 which, believe it or not, is *not* a Flying Wing type but a conventional two place "all weather" jet fighter designed to replace the war famed P-61 *Black Widow*. The new craft is powered by two GE-Allison J-35 turbojet engines mounted side-by-side in the belly just behind the nose. The pilot and radar operator sit side-by-side in a pressurized, air conditioned cockpit above the engines. A feature of the speedy black craft is its armament versatility. Its special armament nose can accommodate almost any combination of aircraft machine guns, cannon, rockets, etc. in seemingly infinite sizes, arrangements and combinations. It was flown at Muroc Base after having been trucked under heavy canvas from the Northrop plant at Hawthorne, Calif. about 80 miles away.

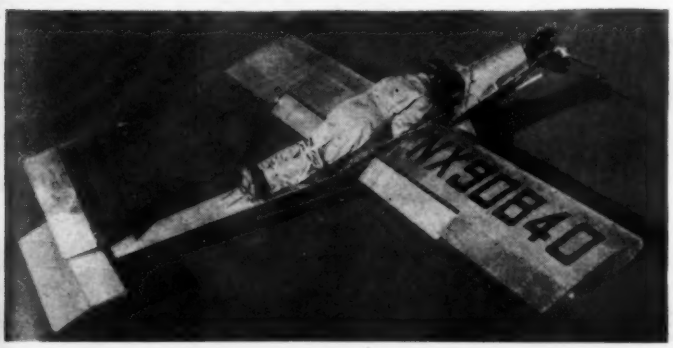
SECOND NEW aircraft of the month is the North American XAJ-1, Navy attack plane designed for operation from the Navy's new 65,000 ton supercarrier. The AJ is powered by two conventional reciprocating engines mounted in the wing and a turbojet engine enclosed in the fuselage. The sleek new craft has a gross weight of more than 30 tons and is not in the super-performance class but rather is designed for versatility in anti-submarine warfare. It will be fitted with complex radar equipment for search missions together with depth charge, bombs, flares and other armament.

POSSIBLY ONE OF THE most cussed and discussed airplanes ever to be built in the U.S. is the Consolidated Vultee B-36 bomber, largest landplane ever built. Designed originally to carry 10,000 lbs. of bombs for 10,000 miles and 72,000 lbs. of bombs for a shorter distance, the monster (150 ton) craft has been subjected to more critical attacks both within and outside the military than any other airplane excepting the Hughes flyingboat. Now, however, 13 of the giants have been delivered and several of these, including the prototype, have been flying in service test status for many months. According to AF technical officers the B-36 is only now beginning to demonstrate its real capabilities which are indicative that not only will it meet its original specifications but actually far exceed them. For example, its design gross weight is 278,000 lb. yet a B-36 has already taken off at a gross weight of 311,000 lb. and flown successfully. On this same flight this airplane flew a 6000 mile mission at an average speed of 300 mph, considerably better than its early cruising speed of 220 mph. On another flight the huge craft actually carried aloft 72 1000-lb. bombs and effectively released them in the Gulf of Mexico. Deliveries are now nearing the one-a-week

(*Turn to page* 61)



(Above) New Navy carrier plane, this North American XAJ-1 is powered by two P & W *Majors*, and a GE-Allison jet in fuselage. Tricycle gear and 4 blade props are features. (Below) The ultimate in lightplanes! This 15' span ship weighs 150 lbs. ready to fly. Motor appears to be twin cylinder 2 cycle type used on small target drones, and speed of 90 mph is expected



MODEL AIRPLANE NEWS
JAY P. CLEVELAND
Publisher

Serving Aviation 20 Years

NOVEMBER 1948 VOL. XXXIX—No. 5

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HOWARD G. McENTEE....Editor
JOSEPH M. MANN....Managing Editor
WITTICH HOLLOWAY....Art Director
JAY P. CLEVELAND....Adv. Manager

Advertising Representative. WEST COAST: Justin Hannon, 5429 Crenshaw Blvd., Los Angeles 43, Calif.

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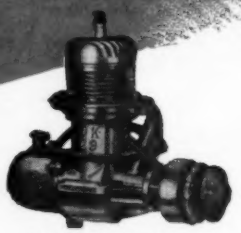

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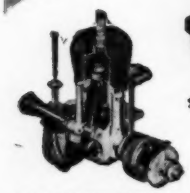

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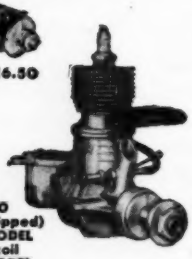

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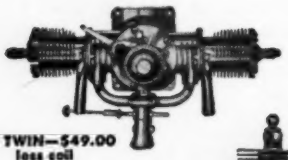

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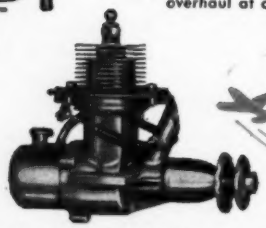

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Twin	Exp.	1.208	.900	.930
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Class A, Open record speed of 106.21 mph established by Jim Clem, Dallas, Texas, on March 28, 1948, with a Bantam.

★ **COMPRESSED GAS (CO_2) MODELS**

Single class, Senior record time of 3:11.4 (3-flight total) established by Joe Harris, Atlanta, Ga., on March 14, 1948, with an "OK" CO_2.

★ **COMPRESSED GAS (CO_2) MODELS**

Single class, Junior record time of 2:9.6 (3-flight total) established by Dick Culver, Oak Ridge, Tenn., on June 12, 1948, with an "OK" CO_2.

★ **FREE FLIGHT GAS MODELS RISE OFF GROUND**

Class A, Junior record time of 6:38.0 (3-flight total) established by Ed Roberts, Jr., Marietta, Ga., on June 13, 1948, with a Bantam.

★ **FREE FLIGHT GAS MODELS RISE OFF GROUND**

Class A, Senior record time of 6:27.2 (3-flight total) established by Edward Holeva, Schenectady, N. Y., on June 27, 1948, with a Bantam.

★ **FREE FLIGHT GAS RISE OFF WATER**

Class A, Open record time of 3:13.0 (3-flight average) established by Paul Salake, Hampton, Va., on December 8, 1947, with a Bantam.

★ **CONTROL LINE SPEED GAS MODELS**

Class A, Senior record speed of 107.48 mph established by Maurice Stanglin, Dallas, Texas, on February 10, 1948, with a Bantam.

★ **COMPRESSED GAS (CO_2) MODELS**

Combined class, Open record time of 14 min., 54 sec. (3-flight total) established by Joe Dodson, Hampton, Va., on March 4, 1948, with an "OK" CO_2.

★ **CONTROL LINE SPEED GAS MODELS**

Class A, Open record speed of 97.47 mph established by John Kasserman, Knoxville, Tenn., on March 9, 1948, with a Bantam.

★ **FREE FLIGHT GAS MODELS RISE OFF GROUND**

Class A, Open record time of 11:20.8 (total, 2 flights) established by Marjorie A. Watkins, Oakland, Calif., on April 11, 1948, with a Bantam.

★ **COMPRESSED GAS (CO_2) MODELS**

Single Class, Senior record time of 8:54 (3-flight total) established by Phil Sargent, 213 Thurston Ave., Chattanooga, Tenn., on July 13, 1948, with an "OK" CO_2.

★ **COMPRESSED GAS (CO_2) MODELS**

Single class, Senior Record time of 11:14.8 (3-flight total) established by Ed Luscinskas, Warehouse Point, Conn., on July 18, 1948, with an "OK" CO_2.

FIRST PLACE WINNERS at the 1948 Nationals

FIRST— Control Line* Speed Gas Models Class A, Open, Harold DeBolt, Williamsville, N. Y., 108.43 mph with an "OK" Bantam.

FIRST— Control Line* Stunt Class A, Open, Harold DeBolt, Williamsville, N. Y., with an "OK" Bantam.

FIRST— Compressed Gas* (CO_2) Models Single Class, Junior (3-flight total) 4:55 by Larry Erickson, Omaha, Neb., with an "OK" CO_2.

FIRST— Compressed Gas* (CO_2) Models Single Class, Senior (3-flight total), 7:28.6 with an "OK" CO_2.

FIRST— Compressed Gas* (CO_2) Models Single Class, Open (3-flight total), 11:37.3 with an "OK" CO_2.

●

FIRST PLACE WINNERS at the 1948 Plymouth International Meet

FIRST— Control Line* Speed Gas Models Class A, Junior, 93.26 mph with an "OK" Bantam.

FIRST— Control Line* Speed Gas Models Class A, Senior, 102.2 mph with an "OK" Bantam.

FIRST— Control Line* Speed Gas Models Class A, Open, 102.1 mph with an "OK" Bantam.

Unofficial—Verification when officially released.

●

And these are just a few recent winners announced by the A.M.A. Contest Board . . . authentic proof that "OK" consistently powers the champions. Watch this column in future issues for the latest records set by "OK" powered models. So if you want championship performance, you're on your way when you say "OK".

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SCRAP BOX

By BILL WINTER

IMPRESSIONS OF THE NATS—We're back from the 17th National Model Airplane Meet at Olathe, Kans.—biggest and best since the war and good enough to be compared favorably with those splendidly organized meets in Chicago in 1940 and 1941. If the Naval Air Base at Olathe is available next year, the 1949 Nationals will be something to see.

. . . As the mob began to trickle in two days ahead of time, the startled officer of the day groaned, "But you guys are not supposed to be here until Tuesday!". . . For a dormitory the Navy had 1,200 beds in Kinnick Memorial Hall. At least as many birds chattered in the rafters at daybreak. . . . Things got off to a bang-up start on Monday evening when Frank Lashek (Asbury Park, N.J.) fired up his hot jet. The Commanding Officer beat a hasty retreat to his office to send out the gendarmes, but at the festivities on final night he was able to compliment the crowd on the magnificent safety with which all events were run.

. . . Waiting final score on meet champ, "Tex" Witherspoon, Navy PRO, called on state groups to sing their national anthems. Texas obliged (of course). When he reached Newfoundland in jest an unknown brought down the house with a seal-like "arf, arf." . . . M. J. "Fog Horn" Thomas (Pittsburgh), whom tradition requires to announce the radio control events over the public address system, breathlessly described one flight. Then, in a stage whisper that carried a half mile, "Oh, oh—he forgot to turn on his receiver!". . . Old, oldtimer Joe Lucas, flying stick and fuselage expert. When it came time for trophy awards Joe, first winner of the *Mulvihill* way back in 1928, presented colorful trophy to 17 year old Pete Nishannian of New York. When Pete rode back with us we got as near to the *Mulvihill* trophy as we'll probably ever get. . . . Merrill Hamburg, forgotten by all but a few for his leadership in the twenties. With his *AMLA*, appearing in the old *American Boy* magazine, he is supposed to have started 2,000,000 model builders on their way. . . .

Energetic and unidentified man who sold programs all over field throughout the meet. On trophy night he was introduced as the president of Olathe Chamber of Commerce. And greeted with cries of "programs! programs!". . . Finally met somebody from Walla Walla—a pleasant chap named Murphy. Had a 14 year old *Cavalier*, with pyloned wing and an *Orwick*. Oh, these rules! Saw a *Sailplane* from Cleveland with an extra 4 ft. in the centersection. 1300 sq. in., they said. "That's nothing," sez Murphy, "we've got one back home with 4000 sq. in. Flies like an indoor job.". . . A few free flights did look like winged bazooka barrels, and no kidding, but *McCoy 49's* in *Zippers*, *Orwicks* in *Bombshells*, *Hornets* and *McCoys* in *Sailplanes*, and everything but atomic power in originals proved trend is toward hot engines in familiar airplanes. Except in D, where lots of ships are for the birds. Big ones. Like Condors.

. . . Madman Yates putting Bob Palmer's beautiful scale Stearman through the stunt routine. Good stunt men are unhappy. Everybody can do the pattern. More originality demanded. When and if rules change stunt will go the way of speed. But that is U-control competition where element of

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skill in flying limits top competition to a few, unlike free flight where element of luck gives amateur chance of upsetting the hot-shots. . . . The jet man who thrilled the crowd by waving tail pipe of an operating jet up and down in front of the microphone. "Must be doing at least 250 mph," was the cry. . . . What the modelers didn't see was the never ending day and night meetings of AMA Executive Council and others working out solutions to our organizational problems. AMA President C. O. Wright did a tremendous but quiet job on keeping things rolling. After long talk with C.O. we figure he is for the builder everywhere, with level-headed approach that puts him above intersectional pressure groups. Moreover, he is getting results. Easterners take note. . . .

Lanzo with his black English rubber. At 250 turns on the winder, we asked "Won't you break it?" "Oh, it's just quarter wound," said the great rubber man. "It takes 1,300 turns on a 3-1/2 to 1 winder!" Chet, 'tis said, will distribute the rubber in this country. Now, why can't we have rubber like that? How about it, U.S. Rubber? . . . California metal speedsters something to see. Not kits either. Now that machine shops have entered the battle, plenty of guys are throwing up their hands. Said H. A. Thomas, "If I have to be a tinsmith, control line isn't for me." . . . Walt Schroeder helping prewind our Wakefield motor at three in the morning. Don't ask how we made out in the Wakefield, but we breathed easier when Jim Walker won the Dumb Bell Trophy for hitting a tree in a big open field with a *Fireball*. Anyway, Walt hooked on knob, backed off across room, through door, across hall and began to wind. Just then Navy officer popped around corner and said, "Don't you fellows ever give up?"

. . . Don Newberger refusing a mark of 175 mph. He knew better. As did every California watch on the field. One timer really boiled but Don stuck to his guns. Cal. records must be square. Too many eagle eyes to be otherwise. . . . Keith Storey test flying brand new ship at 4:30 to scare daylights out of Thomas-Wallick team who had just crowded 150 mph for first in D. Thomas flew again and broke 150 just to make sure; then Storey flew at ten to five, just failing to make grade. Tension in these last minute California showdowns just mounts and mounts. Storey used a stock *Super-Scru* on 149 mph test flight. We know because we saw, and felt it. . . . Rubber modelers better take up cigar smoking with trend to dethermalizers of fuse type. Had to light up both Korda and Lanzo in the wind. . . . Old master Jim Cahill appearing suddenly with rather freakish Wakefield. Airfoil fuselage, vertical rubber peg with diagonal rubber motor, twin fins of different sizes with bigger fin on inside of turn. Before we could get a gander, Jim was off for 6-1/2 minutes and a place on the Wakefield team. . .

Johnny Clemens, (Dallas) bewailing trophy interest today as compared with spirit of yesterday. Proposes a ring of easy chairs for speed merchants who will sip cold drinks as they tell each other how fast they are flying. Biggest exaggerator wins. If that proves too tough, entrants will be allowed to mail in their speeds anytime within the next year. . . . Jim Walker winning radio control with a tremendous last minute flight after being hopelessly out of the running. Had trouble all through meet. Right rudder hit up elevator but only when engine was running. Tough to trouble shoot. . . . Lanzo's night R.C. flight with flashlights on the landing gear. Got into spin. Which way? Give it right rudder advised Shulman, another radio entrant. Mad spin the other way. Big boom. (Broken prop!) You've got to see them to fly them. Shulman, with MacElwee's ship had one red-painted wingtip to tell which way model was flying.

* *

At last year's Nationals the big topic of discussion was free flight. Mainly due to processing headaches and interminable waits in line—but you should have seen the free flight debacle at this year's *Mirror* meet!—the rules had to be changed shortly

(*Turn to page 9*)

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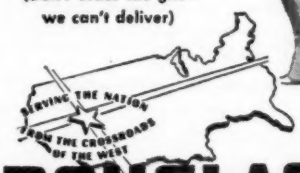

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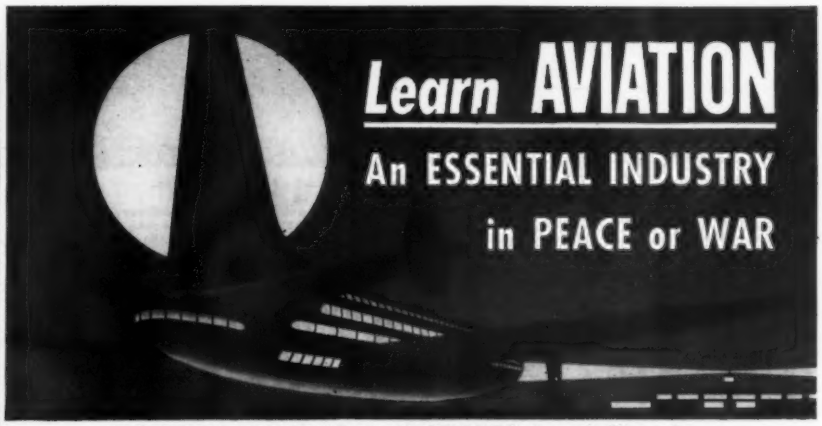

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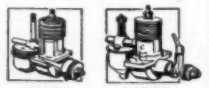

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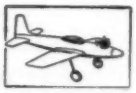

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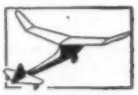

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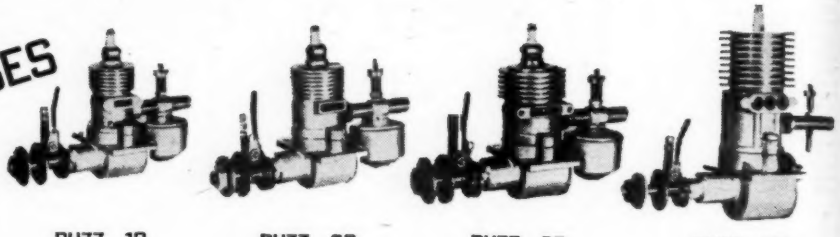

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We are the largest model motor headquarters in the world. We have sold over 200,000 model engines (made by 117 different manufacturers) in the last 15 years. We *know* engines. When we were approached by one of America's largest companies in this field and offered the exclusive agency for the sale of the BUZZ, we knew we had the biggest bargain ever offered to the American Modeler.

WHO MAKES THESE ENGINES?

The BUZZ Engines are manufactured by a company that for years has been the world's largest maker of automobile replacement pistons and other precision gasoline engine parts. Thousands of gas engines and parts were made during the war by this company for the War Dept. for use in walkie-talkies, field generating sets, etc., etc. Since the war, thousands of gas engines have been made for scooter, lawn mower and other industrial uses. When we say unconditionally that the BUZZ engine is well engineered and well constructed, will give you plenty of good service, this is no idle boast, but a fact!

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As the owner of a BUZZ Engine, you are sure that you will always have available full service for your engine, as well as replacement parts. You will never have an "orphan" engine on your hands. We guarantee service and parts for your engine for at least five years.

PRECISION ENGINEERED!

Despite its low price, the BUZZ Engines have been engineered to the last decimal point. Pistons and cylinders have been carefully burnished by a special patented process within .0002 of an inch. All bearing surfaces are made of selected materials and finished with the most costly care and equipment. Even a Champion Spark Plug is included. Every BUZZ Engine is indeed a jewel of precision engineering.

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1948 MODEL ENGINES AT LOWEST PRICES EVER!

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- Construction and materials that permit use of engines in boats and cars as well as airplanes.
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NOW YOU CAN AFFORD THE BEST!

SPECIFICATIONS

	A	B	C	D
Displacement	.199	.299	.350	.610
Bore	.66	.812	.880	1.00
Stroke	.562	.562	.562	.777
Horsepower	1/7	1/6	1/5	1/4
RPM	7,500	8,000	8,500	9,000
Propeller	8"	10"	11"	12"
Weight (ozs.)	4	4½	4½	9

COMPLETE ACCESSORY UNIT

Sold only with each BUZZ Engine

Coil-Condenser-prop-switch high tension wire-ignition wire-coil holder-battery box-wrench-presto engine starter, No. 70 oil.

ONLY $2.49

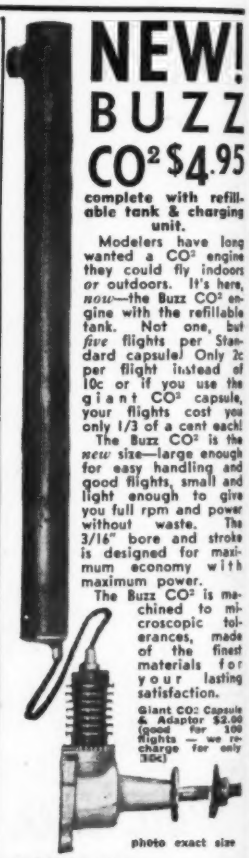
NEW! BUZZ CO² $4.95

complete with refillable tank & charging unit.

Modelers have long wanted a CO^2 engine they could fly indoors *or* outdoors. It's here, *now*—the Buzz CO^2 engine with the refillable tank. Not one, but *five* flights per Standard capsule! Only 2c per flight instead of 10c or if you use the giant CO^2 capsule, your flights cost you only 1/3 of a cent each!

The Buzz CO^2 is the *new* size—large enough for easy handling and good flights, small and light enough to give you full rpm and power without waste. The 3/16" bore and stroke is designed for maximum economy with maximum power.

The Buzz CO^2 is machined to microscopic tolerances, made of the finest materials for your lasting satisfaction.



Giant CO^2 Capsule & Adaptor $2.00 (good for 100 flights — we recharge for only 35¢)

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- POWERFUL
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- PRECISION BUILT
- FREE FLIGHT OR U-CONTROL
- 3/16" bore & stroke; .0052 cu. in. displ.; speed range 2,000 to 6,000 rpm.
- FLIES 18" to 24" models and up.
- Weight only ⅝ oz. ready to fly.

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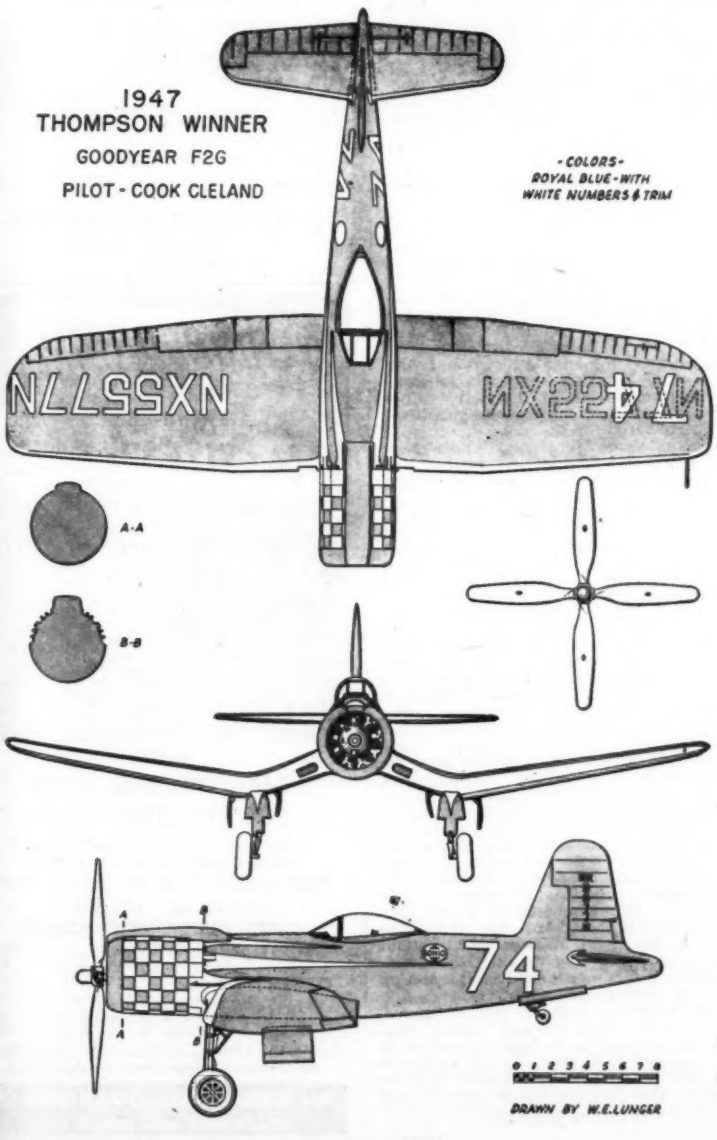
(*Continued from page 4*)

after. This year the hot topic was control line. The trouble, this time, is far more serious than processing. This issue affects the very welfare of the hobby. Speeds are dangerously high and still climbing. Many of the experts feel this came about because of the glow-plug and hot fuels which gave a great many people the chance to fly fast. There can be no squawk here. The vital point, as the key speed merchants will tell you, is that models will have to be slowed down. Suggestions run the gamut from increasing wire sizes, hence drag, to rules on size or area. So far there is no accord. In our opinion the quickest hope of solution lies with California. That state is the acknowledged leader in speed and has been primarily responsible for the U-control rules we fly under. Moreover, with their smooth working associations they are set up to effectively lock horns with the problem, and then make recommendations via AMA.

As a free flighter, we feel that the U-control boys have the responsibility of cleaning their house before accidents endanger the existence of all power flying. Instead of hushing what goes on it would be better if the issue were dragged into the open. Any superficial approach to the safety problem, such as increasing pull test, won't do. J. C. Yates, for example, was one of the many people at the Nationals who pointed out that severe pull tests are dangerous in themselves. Such tests impose stresses on a structure that might cause failures at much less a pull than the system would have withstood in the first place. Yates claims that severe tests may stretch a line as much as an inch or an inch and half. Talk of 100-G pull tests is pure madness.

We were terribly discouraged at the Nationals to hear leaders frankly discuss this problem and the need for action but, at the same time, to display a lack of gumption in facing up to the elemental factors that make airplanes fly fast and then do something about it. With *Doolings* in what used to be *Bantam*-sized models, the situation is fast growing impossible. If not ridiculous. So let's hope that the yo-yo boys don't treat the safety question the way they are handling noise. With mufflers available, flying has been stopped because of noise at too many places. Apparently the average speed flier who makes the din is just as inconsiderate of the public as the free flighter who breaks down fences and stomps on crops. A little foresight and consideration would fend off a lot of trouble.

And speed has other serious ills. The entire system of making and recognizing records needs to be revamped, state the



4 BEST SELLERS
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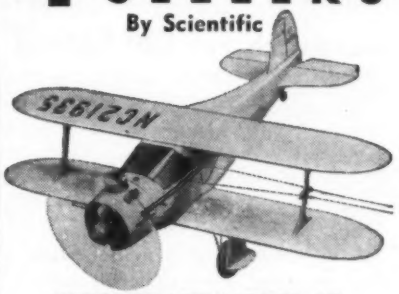


BEECHCRAFT MODEL 17

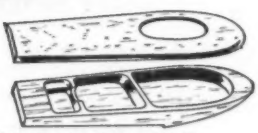
PREFABRICATED—For engines .099 to .49 displ., wing 24". Kit includes a finished balsa carved fuselage, aluminum cowling, landing gear, bell crank, decals, gas tank material, silkspan, tail wheel, metal hinges, etc.

$5.95

CO_2 SQUIRT

Designed for use with all CO_2 engines. Kit has die-cut parts, flywheel, 3-bladed metal propeller, propeller shaft and housing with rubber tubing universal joint and hardware. The Squirt measures 12½" long, with a 4" beam.

$1.50



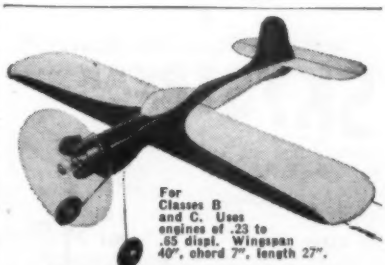
BUCKEYE SPEEDBOAT

Class "E", length 17", beam 5⅛", for engines of .099 to .49 displ. Kit contains carved hull, cast metal propeller, shaft and housing, hardware, decals, etc.

$4.95

UNIVERSAL JOINT 75c

1¼" FLYWHEEL 75c



For Classes B and C. Uses engines of .23 to .65 displ. Wingspan 40", chord 7", length 27".

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$3.95

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A completely built model plane ready for assembly, includes all parts finished and colored, less power plant, assemble and fly it in five minutes.

Dick Korda's WAKEFIELD CHAMPION

$1.50

KIT No. Z2

SPECIFICATIONS

Wing Span - 44" Length - 36"
Chord - 5" Wing Area - 200 sq. "

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READY TO FLY 50¢

COMPLETELY FINISHED AND COLORED READY TO ASSEMBLE AND FLY

BANTAM "SPECIAL"

CLASS "A" & "B"

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KIT UC-4

SPEED CONTROL LINE MODEL

SKYSTREAK

CLASS "A" ONLY $1.95

COMPLETE KIT CONTAINS

1. CARVED FUSELAGE
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3. SHAPED TAIL & RUDDER
4. SHAPED LANDING GEAR
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very boys who set the records. Under the present system, anyone who breaks a record by a sizeable margin is on the spot. Missed laps are commonplace, as with Newberger's refused mark at the Nationals. If Newberger had taken that mark, an entire class of speed competition would have been ruined. Chuck Lee, who went out with us, had an extra lap charged against him, knocking down his time to put him out of the top winners, though he did not protest. Some people have been known to fly with illegally thin wires because they knew they would not set a record and would not be miked. It is too easy to fool around with certain sized engines giving them virtually equal performance with bigger engines. In at least one case, you can put a big piston in a smaller engine of an entirely different class. We know of a "standard" *Bantam .19* that actually had a displacement of *.24*.

Men like Bob Thomas, of Anaheim, would like to see the AMA record trials set-up abolished. We refer to the National picture and other classes of models as well as speed. Records should be set at sanctioned meets only and record models should be miked on the spot for things like pistons and lines. Until such measures are taken we can't begin to have reliable, reputable records. After that, some important improvements in methods of timing need to be worked out. We simply do not have qualified personnel for such timing at many meets, even the larger ones.

• •

The Minneapolis jet boys are swarming us under. Howard Lundquist, who says several of the boys hope to top Glenn Tempte's incredible 179 mph plus, passes along some tips from the more westerly of the Twin Cities. "The valve," he begins, "has better wearing properties than originally supposed. My valve is as good as new after 73 flights. There is no problem of the correct prop, best fuel, proper spark. The only problem is the refinement of design and streamlining to achieve minimum drag.

"It has been proved," Lundquist continues, "that the fuel outlet line from the tank should be at least ⅛" I.D. and preferably greater. Long slow strokes of the pump will start the engine faster and with less effort. Jet models should be allowed to fly themselves out of the dolly rather than be 'horsed' out as in usual practice." Thanks, Howard, for the dope.

The man who launched Tempte's jet record job is here to tell us about it and other model doings in Minneapolis. Okay, Ralph Costlow, the soapbox is your'n.

"The weather was perfect," says Ralph, "with no wind, and hotter than blazes. After the first couple of laps I didn't bother to watch, it was so fast. I watched Glenn instead—and what a sight! He weighs 215 pounds, and to see him go round that pylon lugging that weight and stumbling in the still soft asphalt ramp was a scream. He got about 18 or 20 laps when the ship broke loose. It traveled about two city blocks and went into the grass. That's the fourth time that has happened." Costlow goes on to explain that they were using .012 lines and that there is not too much pull on a jet, just a firm, even force. Tempte thinks the line trouble may be crystallization due to the frequency of the jet. But didn't they once fly *speed* on .016? Jet or piston it doesn't matter.

Minneapolis is a real jet town with at least 15 to 20 enthusiasts going in for two types. Some use open tubes like the new kits but the majority go in for enclosed tubes. Speeds range from 130 mph in Junior to 145-150 in Senior and Open. Piston jobs on the other hand don't step along too fast. Top for D in Minneapolis is about 135 mph on a *Dooling* as this is written, with 119 on a *McCoy 49* and 106 on a *McCoy 29* with a glow plug.

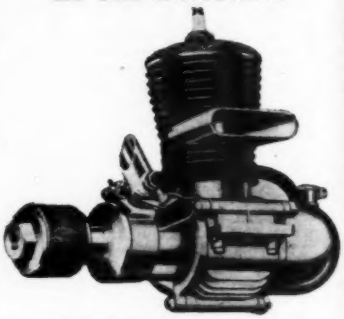
"Free flight is popular around here," Costlow says. "Both gas and rubber. Mal Smith who holds the E stick record of 19 minutes can't find anything to pack the turns into that big rubber motor with its 24" prop. Gas jobs are mostly ignition but

(*Turn to page 12*)

The Hottest Engine News Today—

Bill Atwood's "Triumph '49 & '51"

USED BY THE WINNERS AT THE NATIONALS



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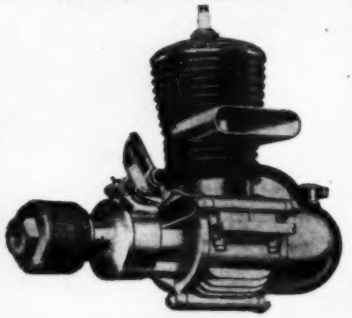

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a few using glow-plugs really go good. Have lost our free flight field and the U-birds have been banned in Minneapolis. We have to go 13 miles to Southport Airport to fly speed. Trying to get an old abandoned airport about 7 miles out for free flight."

Costlow has a good beef on speed. "If a guy is going to build speed he wants to go fast; but to go fast he has to spend an enormous sum souping up engines. Take the average guy and nine out of ten lose their shirts trying to be in the same class as the 'wheels'. I think there is need for professional and amateur classes. I'm satisfied to win a trophy and enough to help cover expenses, but there is no sense going to a contest with three or four fellows who push my stock job into a no-money position. Around here everybody is on an equal footing. That's the sport of it. Let the big money boys tour the circuit. When my engines are done I'm quitting U-control speed—except for jet. I have no choice. I'm going back to free flight. Amen!"

* *

You know, we get to gum beating like this and tend to forget other aspects of model building. Leo Rutledge, for instance, is an oldtimer who has done wonderful things with models in Kansas in combatting juvenile delinquency. He has brought modeling to hundreds of people who never would have seen a model otherwise. Ted Alexander, Norwood (Massachusetts) Society of Model Engineers, tells us of an unusual show put on by his outfit, assisted by Lou Andrews, and his crowd from Newton, Mass. These builders recently went to the Mass. Hospital for Crippled Children, at Canton, and put on a demonstration of U-control flying, and outdoor rubber and sailplanes. Members were delegated to go around with various type models and explain them to the patients.

"The children really got a kick out of the show," says Ted, "and the staff said it was a fine thing for the patients because it brought the outside right into the hospital and made everybody feel they were a part of things. After talking with these youngsters and seeing how brave and cheerful and really unconcerned they are over their handicaps our gang came away with a feeling that is hard to set down, but we want to urge all model groups to put on shows at hospitals wherever and whenever possible.

"Our group," continues Ted, "plans to give shows at other institutions and even at prisons, thus opening up possibilities for our hobby. This kind of thing has a reward that isn't evident in medals and cups and prize money, but that goes into the heart and mind and comes out with a kind of inspiration knowing that one's hobby can make other people happy." Let's hear from other clubs active along these lines.

* *

On the lighter side is this tall but true story from Donald Wilson, Toronto, Canada. "As an amateur member of the Canadian Gas Model Club, I frequent Cecil Tate's Tee Pee Hobby Shop. Recently a beginner in the gas model world entered the shop to complain that his *Trainee* (a kit which is an exceptionally fine flier) was no good, its flight having consisted of a vertical climb and a similar dive. Questioning brought out that everything was in proper condition. Puzzled, Cecil asked if the controls had functioned properly. The reply was startling. Not having watched control line flying, this builder had been puzzled by the lines shown on the plans, omitted them, and had flown the model free flight!"

And there goes the monthly award of a free MODEL AIRPLANE NEWS subscription to the man from Toronto for the best tall, true story of this issue.

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REPORT FROM THE WEST

by "Tip" Hannon

FOR this issue we have a guest writer—a well known modeler—who adds his voice to the rising clamor of those who feel we are going somewhat astray with some of our present day model flying.

By Granger Williams

Having been asked to express my views on control model flying by friend Tip, I am taking this opportunity to comment on the very good article written by Joe Weathers in this department last July. Many of you who are recent model aircraft enthusiasts—or became so later than 1940—have no conception of the interest, both in flying and as a spectator, shown by everyone who flew, or watched models flown, in those precision free flight contests of 1936 to 1939. During the past few years we had given up trying to convince some of the dyed-in-the-wool pylon, polyhedral experts, that interest in free flight was slowly dying because of the lack of spectator (the future modeler) interest in these queer looking, skyrocket climbing contraptions. We are happy to see that we were not alone in our convictions. There must be a great many oldtime gas model flyers who agree with Mr. Weathers that something must be done to revive interest in free flight before it is too late.

Before the advent of the present day endurance type contest, we could often count 100 to 150 scale- and cabin-type models every Sunday or holiday, and at least 300 at a contest. Spectator interest was so high that often there were 500 to 700 people watching the models take off, fly and land within the boundaries of the field. At that time the modelers we knew were out to have a good time, flying their ships every chance they could get, not just to beat the other boys out of a prize at a contest.

With the coming of the pylon endurance model many of the early modelers including myself went to the newly created control line model; there we have remained and watched the development to its present point, where it has started to stagnate as has free flight modeling.

As control line model speeds continue to increase more and more, once hopeful speed pilots drop from the running and enter other phases of model flying, or quit the game entirely, while the same old group of flyers continue to walk away with the prizes at practically every contest.

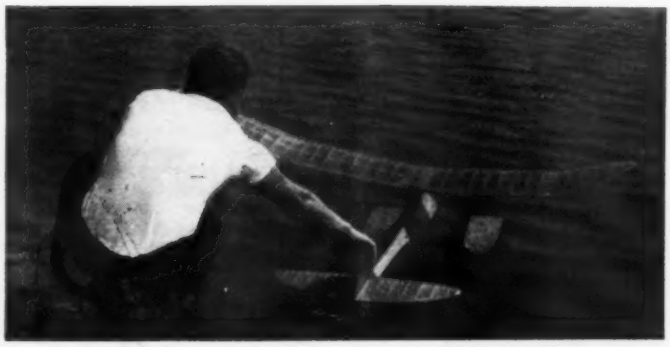
For myself, I seem to have remained about six months behind the fast boys since my return in 1946 from a two year absence. We still keep trying to develop something that would eventually catch up with them, but so far have not met with much success. We work and work, and just when we think we have something that will break a record, some other fellow doing the same thing comes out and sets a new record of five to ten miles faster and we have to start all over again to try and beat the new record.

We have no desire to enter the precision phase of control line flying and try to compete with the experts in that group. Also, as more and more precision flyers become proficient at acrobatics the judges of this event become more hard pressed to pick the winners. Spectator interest in these events begins to disappear because, having seen one precision flight they need not remain to see the rest, for they will be but a repetition of the first. Most of the precision models look the same both upright and inverted and bear little or no resemblance to an actual aircraft. Spectator interest in speed is even less because the speed model is supposed to be designed for level flight and cannot loop, fly inverted, nor do figure eights as do the precision models. Wings become smaller and thinner as do the tail groups. Engines are even increasing in power and durability. The speed model is rapidly becoming more like a bullet in appearance as well as in speed.

As spectator interest dwindles, so does the stock of future modelers become less, in control line flying as well as in free flight. To get that needed spectator interest and the return of sensibility to the modeling game, something in the way of a change will have to be made.

A step in the right direction was made in a recent Burbank contest in which "Team Speed" was to have been introduced to contest flying. We were extremely interested in this event and are sure there were a great many others equally as interested. However, due to a misunderstanding of the rules, which were drawn up by a group of modelers from the F.A.S.T. club, or perhaps only because many interested flyers like myself wanted to see what would happen in such an event before building a model to those rules, the event

(*Turn to page* 60)



(At left) L. A. Morey of Downey, Cal., took 4th place in U-Control scale at Nats (312 points) with this Curtiss O-52. (Below) A. Fagliafico of *Frisco Vultures* launches his Nats ROW 3rd place winner

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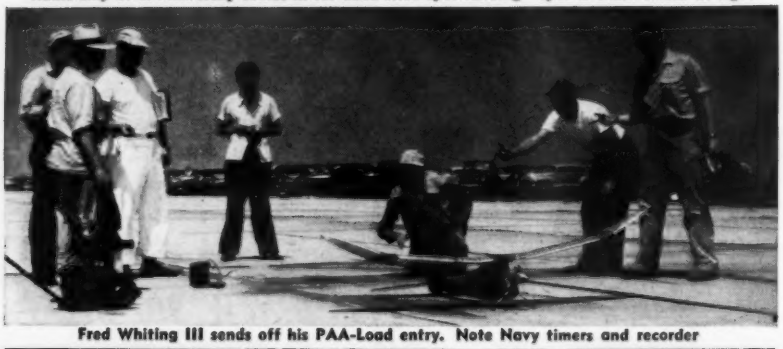
★ THE 17th ★ NATIONALS

Radio ship of E. Foxworthy comes in for dead stick spot landing—spot is chalk smear at right



Fred Whiting III sends off his PAA-Load entry. Note Navy timers and recorder

Charles Dorsett of *Frisco Vultures* gets his rubber job away for nice ROG start

★ ★ ★

BLESSED by five days of fine weather, which even native Kansans assured us was "a bit unusual," the 17th Nationals has passed into history, leaving behind for the great majority of contestants and spectators alike a very pleasant memory. Cool and not too windy days (if we remember that *any* wind is too much in the opinion of most modelers) prevailed for practically the entire period of the meet, and everyone was happy that some of the showers predicted by the weatherman failed to materialize.

The meet was held at the Olathe Naval Air Station—and when we say the Station was completely taken over by model flying it is an understatement. Sponsorship was shared jointly by the Olathe Chamber of Commerce and the American Legion, and upon the Chamber and the local Legion Post fell the brunt of preparatory work. Once the meet started it was the Navy's turn, and their cooperation was 100% plus—from the commanding officer, Captain Keene, right on down to the dozens of efficient timers. It would be impossible to mention the names of all Naval personnel and all the citizens of Olathe who neglected work, home and family to make the meet a success, but we hope each of them will read these words and apply our thanks to themselves personally.

By far the greatest number of contestants were housed and fed at the field (at very lost cost, incidentally) while quite a few were accommodated at private homes in Olathe. The Navy cleared out one entire hangar, lined it with work tables, and told the modelers it was all theirs, 24 hours a day. This hangar became the focal spot of meet activity, and there wasn't a minute—night or day—when there weren't dozens of modelers in it, feverishly building, repairing, or just gossiping.

All controline events were held on the concrete runways; free flight events took place out on the field and were moved from one spot to another as the wind shifted, so that most models landed on the field. There were of course the usual number of runaways—but planes, jeeps and spotters retrieved most of them promptly. As a further service to modelers, meet officials had briefed every farmer for miles around. Thus, when a perspiring modeler arrived at the spot where

(*Turn to page* 16)

★ ★ ★

Arden-powered ROW model is started by Lew Mahieu of Long Beach

M. Hamilton, L. Weber, J. Bamberg prepare Hamilton's U-C scale entry

Bob Huff and Bob Burt of Urbana, Ill., hard at work

Esther and Jim McElroy of *Phoenix Model Air Club*

Chet Lanzo goes in (shoes and all) to launch his ROW entry

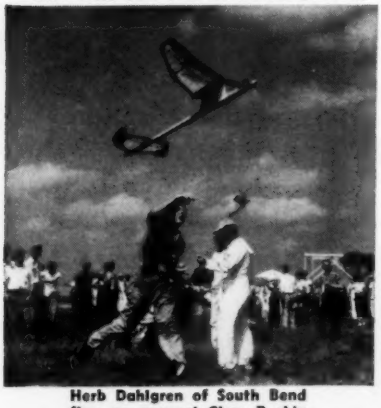
Processing at one of the free flight areas

Fred Sage warms up P-61 scale entry. Ship has electrically folded gear

Club Champs P. Demos, Bilgri, Schumacher, "Mom & Pop," Andrade, M. Demos

Bob Holland receives Grand Champ trophy from Pres. Tom Poor of Olathe C. of C.

Mike Demos of *Oakland Cloud Dusters* launches his Class D ship



Herb Dahlgren of South Bend flew an unusual Class B ship

Jim McLelland (under hat) processes Herb Kothe's winning PAA-Load model

"OK" Foster of San Diego looks pleased with his "Models Unlimited"

Clayton Freese and son of Chicago working on their radio plane

This proves that Jim Saftig can fly without control lines

Richard Enseki and son of N.Y. City, members of *Manhattan Piston Pushers*

★ ★ ★

his ship was seen to settle, he was greeted not by an irate Farmer Brown toting a loaded shotgun, but by a friendly individual who was ready to help.

The telephone and loudspeaker systems were really remarkable. Miles of phone wire around the field enabled every flying site to be in constant telephone contact with meet headquarters in the Navy Administration Building. Furthermore, every activity site on the field had its own P. A. system, so that contestants and spectators alike were continuously informed of new times and special announcements.

Taking the events as they came, several interesting trends were noted. First, there didn't appear to be as much interest in speed events as usual. Stunt of course drew lots of attention, but from the standpoint of real interest the controline scale event was tops. Unfortunately, the interest was mostly with those who watched the event because there were relatively few entrants. The models were first judged for finish and trueness to scale; then came the flying tests, and it was this part that held the onlookers spellbound. The sight of these beautiful ships doing loops, inverted flight and practically all the maneuvers that are performed in straight stunt events by the usual ugly "flying barn doors" created real enthusiasm for this event. Of course, points gained in flying were only a part of the total points awarded to each ship—but the rules state that a model must be flown to be considered for a prize. Some flyers understandably were content just to take off, make a few turns, then land their plane in one piece. Others really wrung their ships out—Open Winner J. C. Yates, for example, put his trim checkered biplane through a complete stunt routine. From the enthusiasm this event created we feel it will steadily gain in popularity.

In the free flight outdoor events, there was as usual lots of activity. We were pleased to note plenty of interest in rubber flying, showing that it is not dead, as some have claimed. Of top interest this year were the Wakefield eliminations held on Friday. This was about the only poor day of the meet, as it was cool and cloudy in the morning. Since heavy showers had been predicted for the afternoon, most Wakefield entrants hustled out to get in their flights before noon. As it turned out, the weather double-crossed the weatherman, and the afternoon turned out clear and hot; times were thus not as high as they might have been.

This contest was held to pick five men and two alternates. The six man team would be completed by the addition of Dick Korda, the last Wakefield meet winner—who was thus entitled under the rules to a place on the team. Dick, however, felt it was so long since his last win that a more representative team would be assured if he competed with the others. This he did, and displayed his old capabilities by turning in a time only one second less than the top place open winner, Dick Schumacher.

The Wakefield qualification was run in the usual Junior, Senior and Open classes, but team members are of course chosen by the times they make. Thus the Number One man on the team is Tom Corryell, who flew in the Senior Class.

Still speaking of free flight, it was noted

(*Turn to page* 54)

★ ★ ★

design forum

by CHARLES H. GRANT

AVIATION inventors have been extremely busy lately in attempts to solve the problem of vertical flight. Sikorsky has demonstrated conclusively that the Helicopter is practical. However, aircraft designers have always shied away from any complicated mechanical gadget and the helicopter unquestionably falls under this heading.

An aircraft can be made lighter, stronger and more reliable when its entire structure is rigid. Some designers who are wedded closely to the airplane speak with not a little derision about the flying windmills. Because of this feeling, a serious attempt was made in the past few years to find some means of flying vertically without the hazard of whirling rotor blades. One solution is what is known as the Channel Wing. This queer looking craft, shown in Fig. I, derives its lift by reversing the principle of the airplane. Instead of pushing the carefully cambered airfoil through the air in order to generate lift, the inventor of this craft has placed two engines with propellers above the wings, one on each side of the fuselage. The idea is to blow air over the wings instead of pushing the wings through the air.

Lift on an ordinary airplane is due to air passing over the upwardly curved uppersurface of the wing at high speed. This creates a reduction in normal air pressure or a suction so to speak. Because atmospheric pressure is reduced on the top, with normal atmospheric, or increased pressure on the bottom, an upward lift force results. In the case of the Channel Wing, the propellers drive the air across the curved uppersurface while the plane is standing still. This reduces the pressure on top of the wing and causes lift. To get the greatest effect, the wings are curved to follow the arc of the propeller closely, but without interfering with the propeller blades. In this way the greatest possible air velocity across the top of the wings is obtained.

Dick Moore of Cleveland, Ohio, has called our attention to this unusual ship. He believes that possibly an interesting model could be built embodying this principle and he sends sketches showing the suggested design for such a model, Fig. 1.

If care is taken in constructing such a model it is quite possible to make it light enough to rise from the ground vertically. At least it should climb very steeply. The problem in this case is to construct the curved wings so the supper camber follows the arc of the propellers with the least amount of clearance between wing and propeller blade tips; and secondly, to synchronize the speed of the two motors. If one motor turns faster than the other, one wing will lift more than the other. It is difficult to synchronize two gas engines. However, installation of carbon dioxide engines will overcome this because a single central cartridge may be used with two lead lines from the cartridge, one to each engine. With this arrangement both engines will be operating under the same gas pressure, provided the two lead lines are of the same diameter and are without kinks. The idea is to have an equal flow of gas to each engine so that equal speeds will result.

The only disadvantage with this type of airplane is its lack of gliding efficiency. The props may get it up to a high altitude quickly, but once they stop the machine will drop rapidly because the spanwise curved wings will generate far less lift than the normal straight wings that are used on the average airplane. This should prove to be a very interesting experimental project for any model builder and it may serve well to illustrate how the general characteristics and behavior of an airplane can be determined by flying an accurate model of it. There are many things that the model will not tell you, of

(*Turn to page* 64)

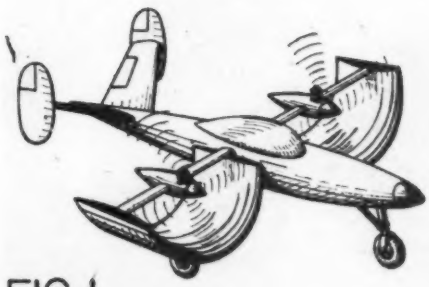


FIG. 1

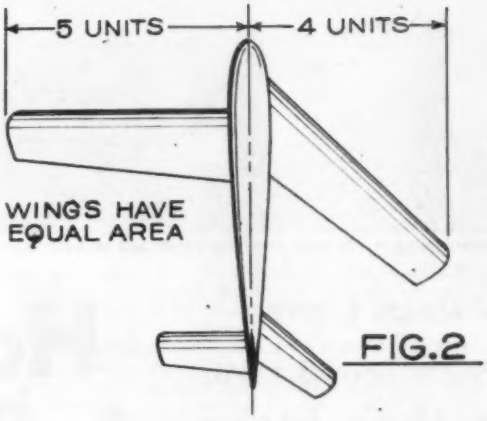


FIG. 2

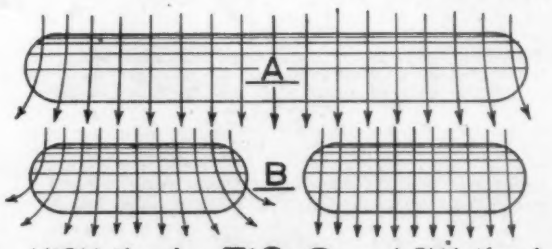


FIG. 3

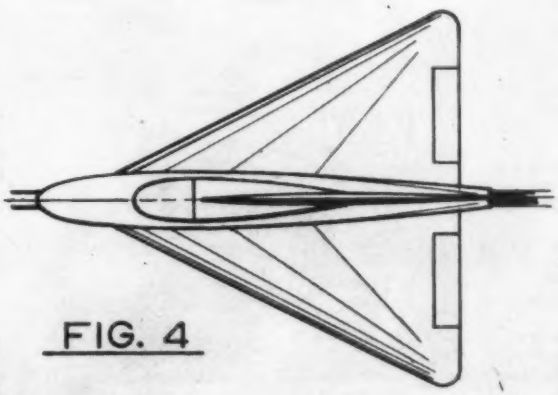
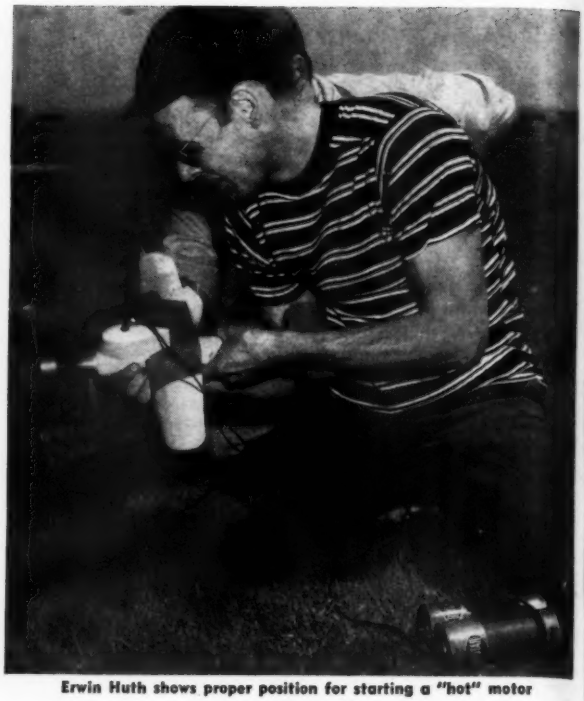


FIG. 4

Wayne Mathews flying at 130 mph. Note sun glasses and removed shoes

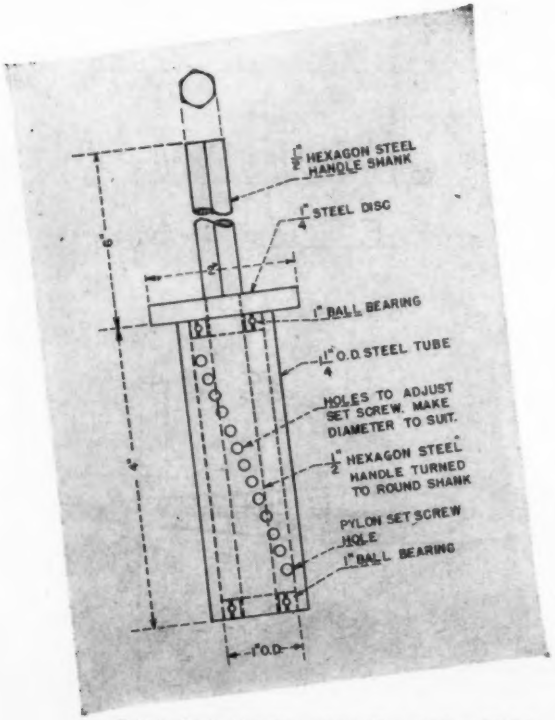


Erwin Huth shows proper position for starting a "hot" motor

by WILLIS L. NYE

Breaking a record takes more than luck—study the finer points

How To Break A Speed Record


1/2" HEXAGON STEEL HANDLE SHANK
1/4" STEEL DISC
1" BALL BEARING
1/4" O.D STEEL TUBE
HOLES TO ADJUST SET SCREW. MAKE DIAMETER TO SUIT.
1/2" HEXAGON STEEL HANDLE TURNED TO ROUND SHANK
PYLON SET SCREW HOLE
1" BALL BEARING
1" O.D.

Detail of pylon handle used by Alameda Aero Modelers

GENERAL—It is almost axiomatic that if you want to break a record something more than a fast plane is required, and that "something" is the technique required to satisfactorily fly the plane at high speeds. The aspiring tyro will do well to watch the performance of accomplished speed pilots in competition; by following the preparation and the actions of veteran speed pilots it is possible to derive considerable knowledge and gradually achieve creditable performance, provided that a high performance race plane is being flown. From then on to success it is up to the talent and ingenuity of the aspirant to achieve top performance in competition.

Wayne Mathews, Erwin Huth and Mal Anderson, all of the *Alameda Aero Modelers*, have held the Class A, B, C and D official AMA records all at the same time during recent months. This is a notable record for one club to achieve, regardless of the latest records. Mathews held the Class D record, Huth formerly held the C record, and Anderson held the A and B records. Anderson builds his own planes and engines. The other men prefer to modify stock engines and install them in conventional model designs and fly to new records.

All of these pilots have developed special techniques, and for the first time, through their cooperation, some of this "know-how" will be presented to the tyro who also aspires to win a string of trophies in fair AMA competition.

YOUR PHYSICAL CONDITION—Observe caution in your eating habits during race competitions. Eat no food that will cause heartburn or gas in the stomach. A good substantial meal, free of gas-producing foods such as starches, is desirable not less than three hours prior to competition time. For a beverage, drink a glass of milk. Or if a meal is not eaten, try some light easily digested foods before competition time. But keep away from carbonated drinks, greasy hamburgers and hot dogs. Why all these precautions? If you are inclined to become dizzy quickly when trotting around the pylon, gas producing foods and carbonated drinks will accelerate this condition. If you suffer from a nasal or mucous condition and your head is clogged and stuffy, better not enter any competitive event—you'll probably lose the race because of poor

Putting model on dolly. Latter has proper wheels for grassy surface

Mal Anderson and Huth demonstrate fast take-off coordination

coordination. Remember that all of your physical, mental and muscular reactions must be coordinated to develop your best form.

LAUNCHING DOLLIES—Every flight starts from the launching dolly. Hence it is the most important factor at the beginning of the flight. Obviously, select the kind of dolly which will be most adaptable to the surface of the circular course. If the flying field is surfaced with macadam, use narrow tread wooden wheel. If it is a grassy field, install 4" or 4½" diam. rubber tired wheels. These wheels ride better and will not develop high friction on the ground, whereas large balloon tires will, and this is not desired. Rough areas may then be easily rolled over at high speed without danger of spilling the dolly. A tricycle wheel configuration, lightly built to absorb shocks of rolling, has been found to be best for general use. The purpose of these precautions is to select a stable dolly and a type of wheel that will not grip the runway surface too closely and thus cause the model to speed out sideways and perhaps crash on takeoff. Check the dolly to see that the wheels are properly toed straight ahead. Also, the use of weights to hold the dolly to the runway surface will not be necessary, provided the wheels and dolly are of the design specified.

As a safety precaution to prevent damage to the prop, make certain the tip clears the ground by 2"; thus high grass must be considered. Another safety precaution is to place the dolly on the periphery of the runway circle and then hold the control lines with a moderate degree of tension imposed on them. Attach a string to the nose of the model and have your assistant pull the dolly forward to check for proper tracking in order to gauge the actual tracking. This latter precaution has saved many planes from crackup on the takeoff. And then there is the vexing question of how to rig the model on the dolly for the best and safest takeoff. The consensus is that the model should be placed on the dolly so it will rock upward to assist the lift-off action after sufficient ground speed has been attained. But don't perform the lift-off operation by the feel on the control line until you can be certain the wings are generating sufficient lift force to support the model's weight in the normal flight attitude.

HANDLING CONTROL LINES ON THE GROUND—An easily operating line reel is indispensable. A reel of this kind permits the lines to be reeled easily and it should have two line grooves. During a reeling operation, always apply a moderate tension to the lines while reeling in or reeling out.

Avoid the use of reels which have metal or plastic clips on the line groove in order to prevent kinking the lines. And if you are fortunate enough to own several speed models, paint the reel the same color as the models for quick identification.

Even with the best of spindizzy technique, control lines may snarl. When this happens, lay the lines on the ground and spread both ends approximately one foot apart. With the assistance of another person, subject the lines to tension, and in all probability the lines will spring apart unless permanently kinked.

Clean line surfaces are an asset to speed flying. Do not apply oiled rags to the lines because this will cause dust to adhere to the steel. Powdered talc applied with a clean cloth is satisfactory. The talc assists disengaging the lines when they have whipped around each other. The talc on the wire surface acts as a mild lubricant, and when subjected to tension the lines should spring apart quickly.

Prior to commencing a flight exhibition, have your assistant lay the control lines on the ground from the model and do not touch them until you are ready to launch. This prevents fouling the lines on takeoff. Many contestants have wrecked their planes by fouling the lines because they are nervous or butter-fingered and jiggled the lines when the engine was being started. You can't perform to your best ability when subject to nervousness. Chew gum, smoke a cigarette, or hold your hands behind you, but leave those control lines *alone* until you are ready to actually fly!

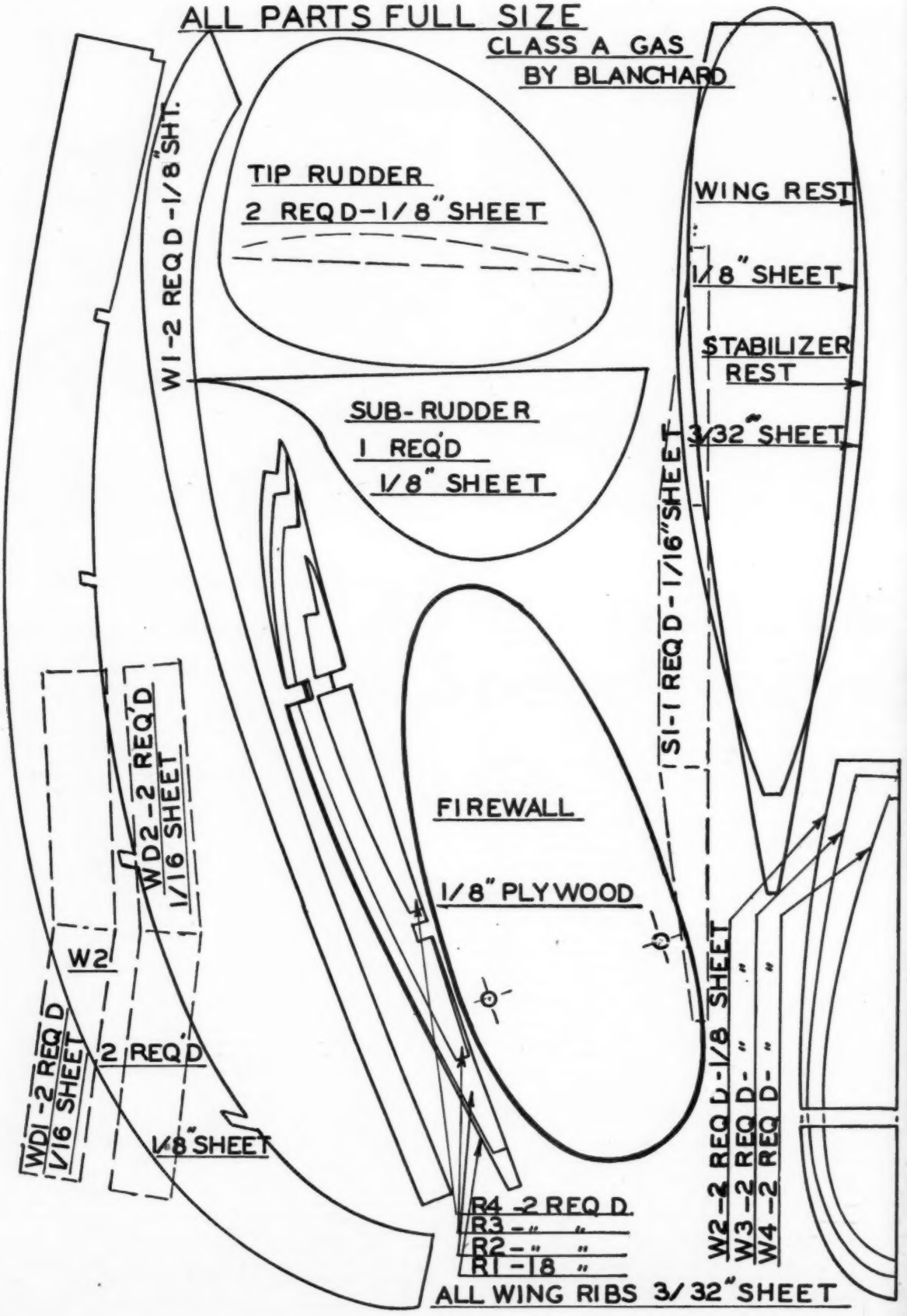
YOUR FOOTWEAR—Footwork is an important part of the coordination of body control and proper poise. Don't wear shoes when flying in competition on the pylon. Here, as in boxing, good footwork pays dividends. The omission of shoes allows you to snuggle closer to the pylon. And don't overlook the fact that the pilot must trot around the pylon as quickly as the model. At 150 mph this means one body revolution approximately every 1.9 seconds. The closer you hug the pylon the shorter the distance you have to trot. Excess trotting is fatiguing. If you elect to fly with your shoes removed, as do the flyers previously referred to, you can wear trousers with cuffs. Heels however, may snag your cuffs and thus cause you to lack coordination of footwork. Or, better yet, if you must have cuffs on your trousers roll the trousers up. Wear a cap with a visor and good sunglasses to kill the glare on a sunny day.

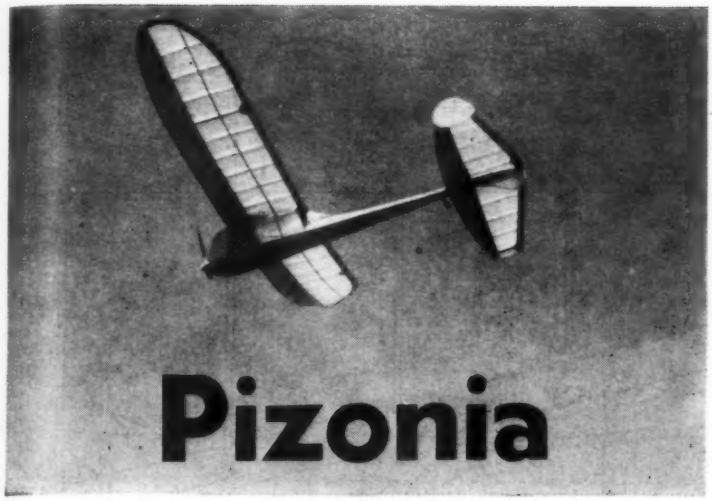
YOUR POSTURE AT THE PYLON—Prior to starting a record attempt, inspect the pylon and determine the most convenient height to fly. And don't forget to check the height every time you want to fly. Check your footwork and body coordination for proper balance and poise.

In competition it is probable that the excitement may cause an acceleration in your breathing. Keep your breathing normal and walk close to the pylon to assist your breath control. For the average pilot, shoulder height seems to be the best position at the pylon for proper holding.

The left hand should be placed on the pylon during the first lap. If this is not done, loss of balance may result. Don't fight the pylon. Remember, it is placed there to assist you.

(*Turn to page* 43)

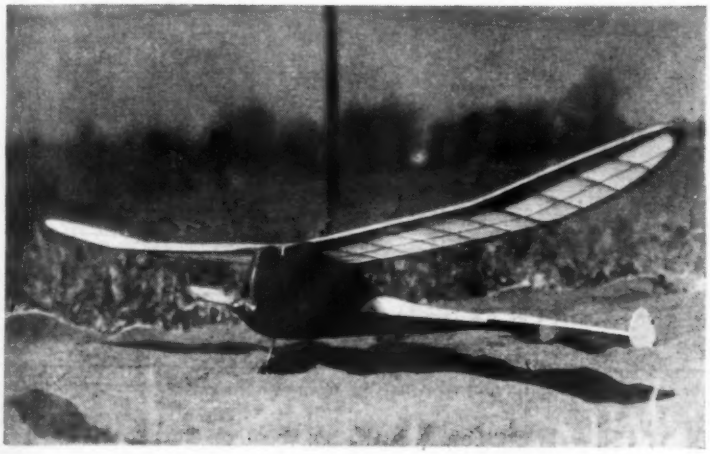

ALL PARTS FULL SIZE
CLASS A GAS
BY BLANCHARD
TIP RUDDER
2 REQ'D-1/8" SHEET
W1-2 REQ'D-1/8" SHT.
WING REST
1/8" SHEET
STABILIZER
REST
3/32" SHEET
SUB-RUDDER
1 REQ'D
1/8" SHEET
SI-1 REQ'D-1/16" SHEET
FIREWALL
1/8" PLYWOOD
WD2-2 REQ'D
1/16 SHEET
W2
2 REQ'D
WD1-2 REQ'D
1/16 SHEET
1/8" SHEET
W2-2 REQ'D-1/8" SHEET
W3-2 REQ'D-" "
W4-2 REQ'D-" "
R4-2 REQ'D.
R3-" "
R2-" "
R1-1 8 "
ALL WING RIBS 3/32" SHEET

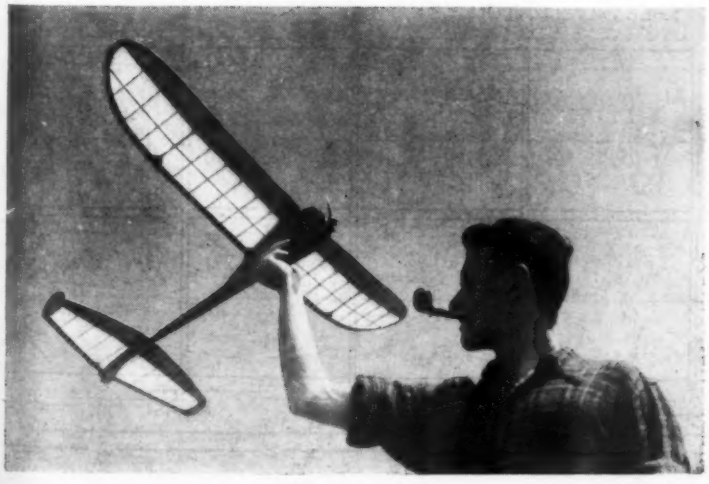


Pizonia

by W. S. BLANCHARD

Here is a slick Class A job, tailored for real results under 1948 rules





PRIOR to the 1948 AMA rules, models powered by the smaller of Class A engines were greatly handicapped. Small models having the former required wing loading of 7 oz. per 100 sq. in. were incapable of competing with the larger .199 powered ships. This was due to the extremely low Reynolds numbers encountered with the smaller ships.

Under the new rules there is no required wing loading, and the power loading has been increased to 100 oz. per cu. in. piston displacement. These changes place a new light on things, and the little ships are now ready to give the larger A's a mighty hard time.

Pizonia is the culmination of several previous designs all aimed toward the same goal: a top contest Class A design using the *Arden* .099 engine. Performance is nothing short of wonderful. Total weight is 10 oz., which is the minimum allowed. Wing area is 240 sq. in., affording a wing loading of 4.17 oz. per 100 sq. in.! This low wing loading allows the thin airfoil used to operate at a very low angle of attack, hence drag is low, and climb is spectacular. The glide is extremely flat, and moderately slow.

In the very late evening, the model consistently turns in well over 2 minutes on a 10 second engine run. The slightest thermal will waft the ship away, due to the low sinking speed, hence a dethermalizer is strongly recommended. This will be no handicap, since 1 oz. of dead weight had to be added to bring the original model up to 10 oz. Now, let's get to work and build *Pizonia*.

Soft balsa is used throughout, except where otherwise noted—*this is very important*. Don't worry about strength; the original model has flown head-on into stone dormitories on two occasions, and has dropped out of numerous trees. The damage to date (75 flights) consisted of several broken props and some torn Silkspan.

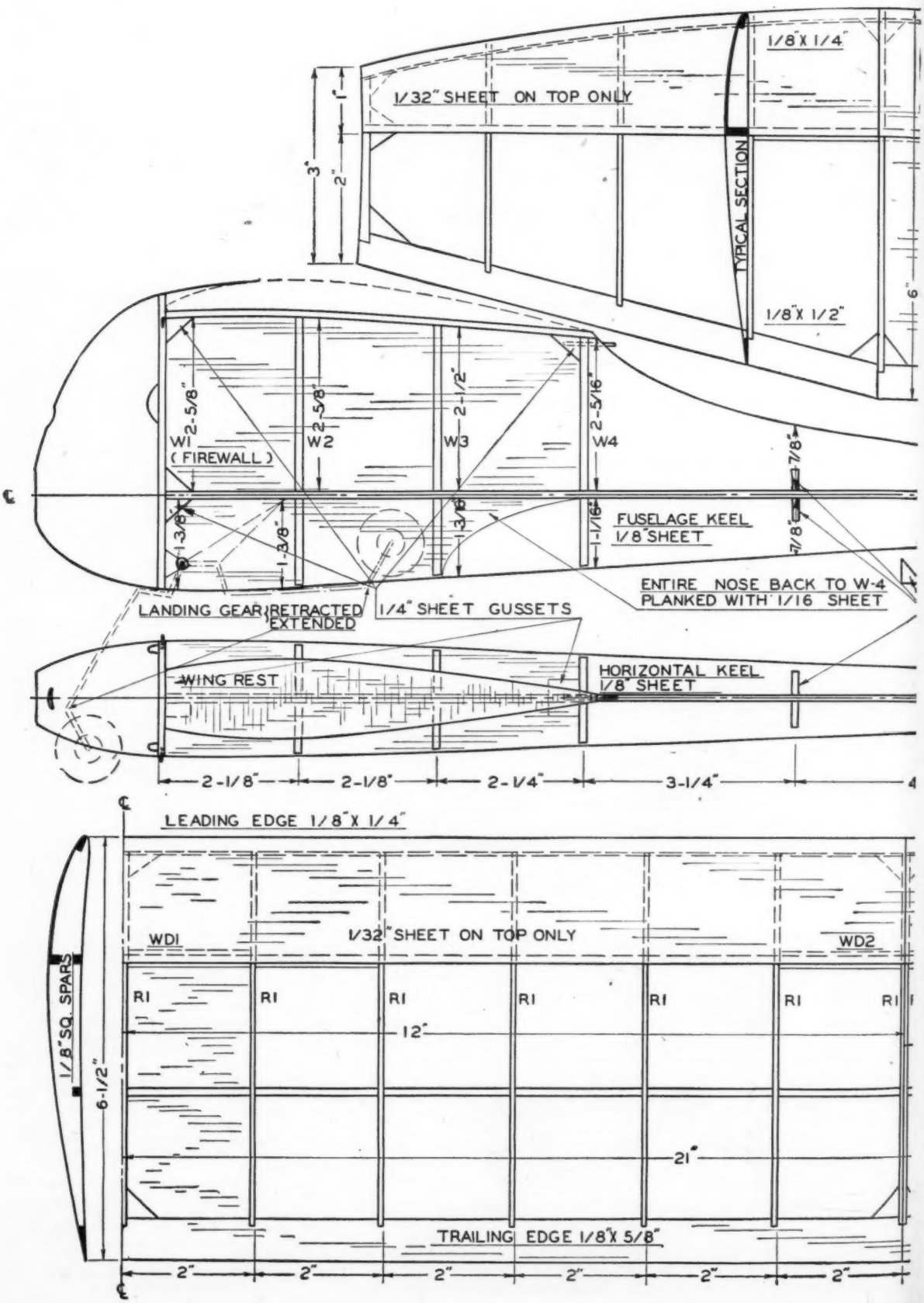
FUSELAGE—Construction of the fuselage is very simple. First, cut out a side view of the fuselage of 1/8" medium sheet balsa, and mark the centerline and former positions in pencil. Then cut out two horizontal keels from 1/8" sheet balsa and cement one on each side of the vertical keel, along the centerline. Now cement the firewall and formers in place. Be sure to cement all gussets in place, and use plenty of cement, especially around the firewall. Mount the engine in place, and cement the nuts to rear of the firewall. (This will allow easy removal of the engine for cleaning, etc.). Cement the stabilizer rest and sub-rudder in place.

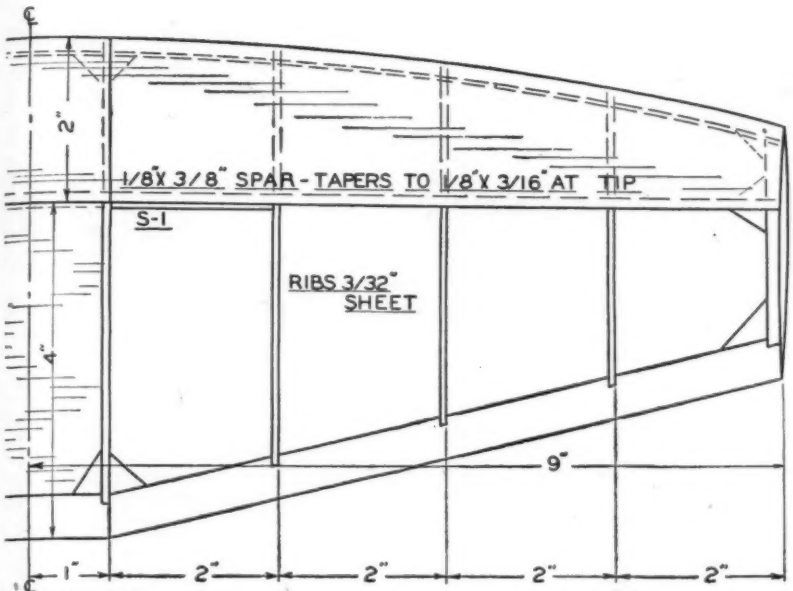
Next, bend the landing gear as shown. Use a 3/4" length of 1/16" inner diam. brass or aluminum tubing for a bushing. Solder washers to landing gear, holding the gear in the bushing. Solder closely, to prevent side-play. Cut out the small balsa landing gear mounting block. Cement the bushing to the block, and wrap thoroughly with thread. Next, cement the block to rear of the firewall. Mount the block so the bushing is not quite horizontal. This allows the wheel to retract slightly to the side of the fuselage keel, and a great deal of strength will be conserved. Bend a straight pin or use music wire for the rubber-tensioner attachment. Use plenty of tension in the rubber, and anchor the other end to the fuselage keel. You will find that in the extended position the landing gear has no tendency to retract. Once the slipstream blows the gear back a short distance, the tensioner takes effect and pulls the landing gear snugly up in its well. Use a rubber tired wheel of approximately 1" to 1½" diameter.

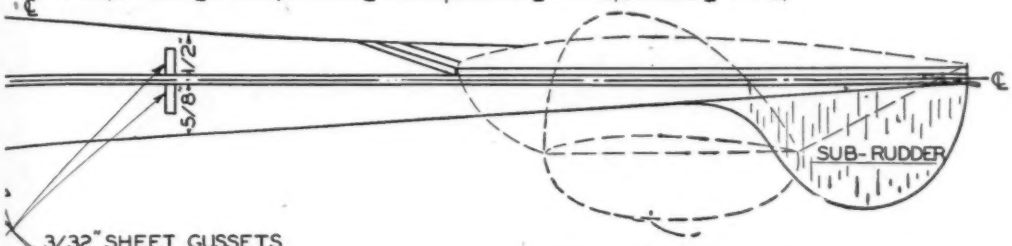
Plank the entire nose of the fuselage with 1/16" sheet, fitting carefully, and using plenty of cement. This must be done with the landing gear extended. When the planking has dried, carefully cut away just enough to allow the gear to retract.

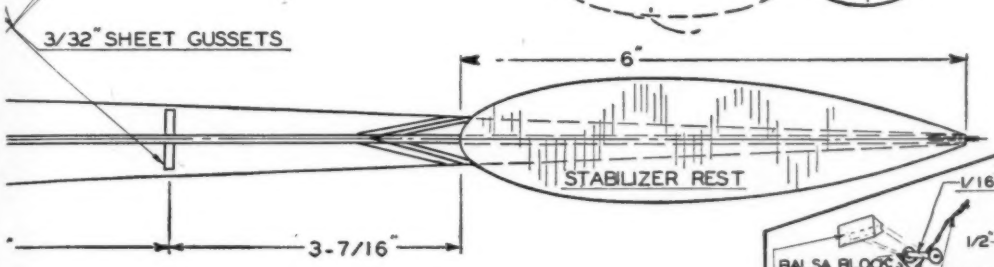
The engine cowling on the original ship

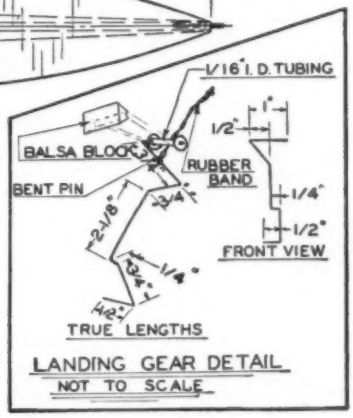
(*Turn to page* 46)


1/8"X 1/4"
1/32" SHEET ON TOP ONLY
TYPICAL SECTION
1/8"X 1/2"
3"
2"
1"
6"
W1 (FIREWALL)
W2
W3
W4
2-5/8"
2-5/8"
2-1/2"
2-5/16"
7/8"
1-3/8"
1-3/8"
3/8"
1-1/16"
7/8"
FUSELAGE KEEL 1/8" SHEET
ENTIRE NOSE BACK TO W-4 PLANKED WITH 1/16 SHEET
LANDING GEAR RETRACTED EXTENDED
1/4" SHEET GUSSETS
WING REST
HORIZONTAL KEEL 1/8" SHEET
2-1/8"
2-1/8"
2-1/4"
3-1/4"
LEADING EDGE 1/8"X 1/4"
WD1
1/32" SHEET ON TOP ONLY
WD2
1/8" SQ. SPARS
6-1/2"
R1
12"
21"
TRAILING EDGE 1/8"X 5/8"
2"

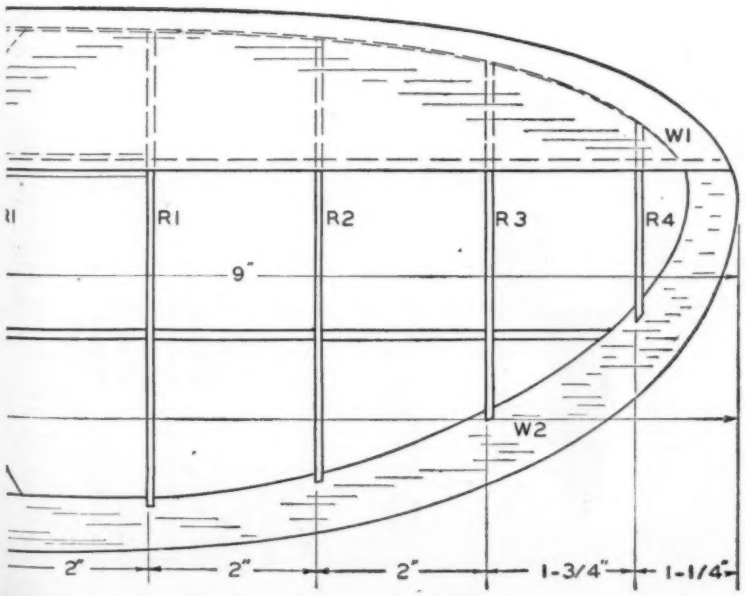








LANDING GEAR DETAIL
NOT TO SCALE



WING AREA-240 SQ.IN

WT.-10.0 OZ.

WING LOADING:
6.00 OZ./SQ.FT.
4.17 OZ./100 SQ.IN.

PWR. LOADING-
.100 OZ./CU.IN.

CLASS A GAS JOB

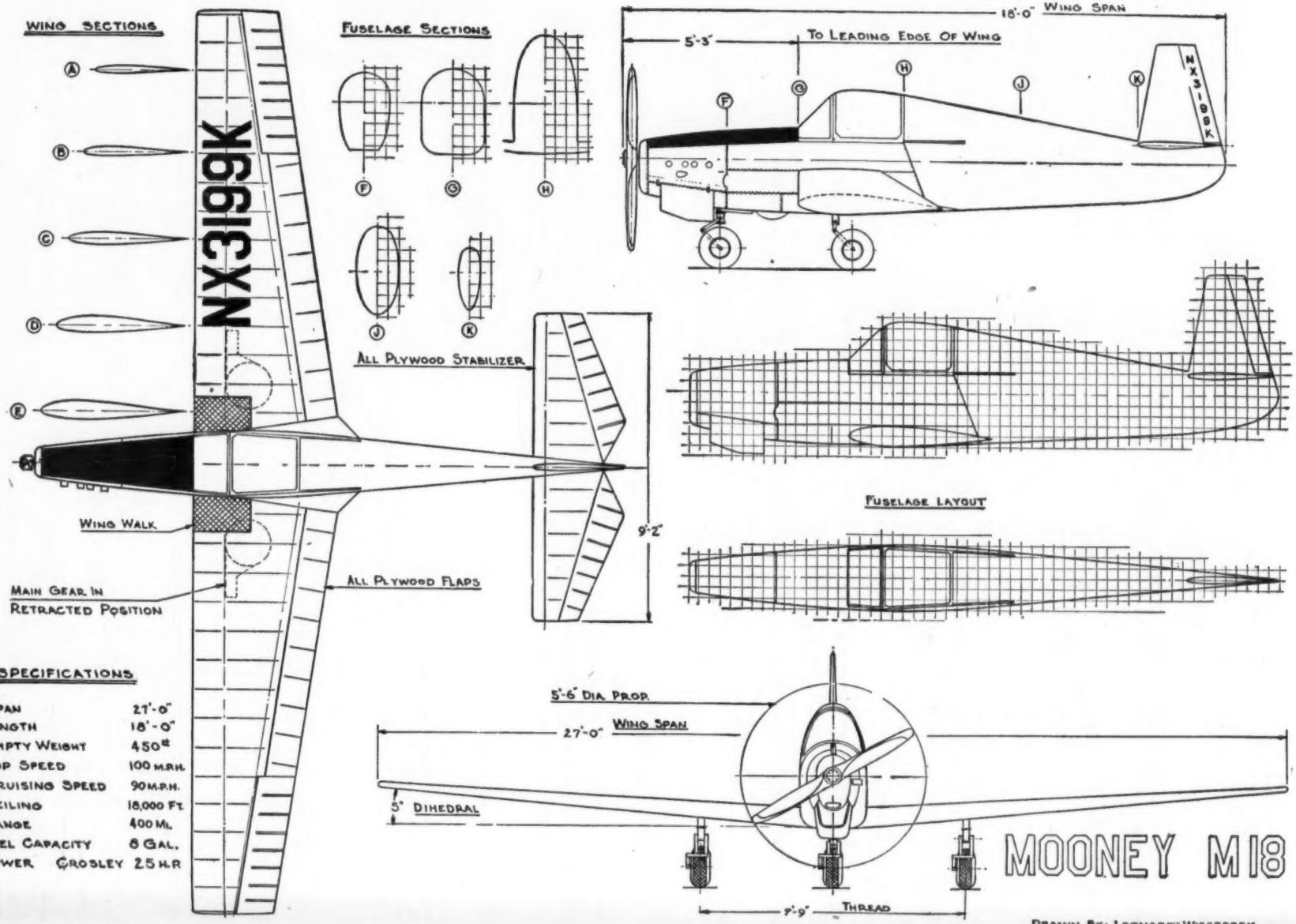
POWERED BY DIESELIZED OR GLOW-PLUGGED ARDEN 099

DESIGNED EXPRESSLY FOR TOP CONTEST PERFORMANCE UNDER 1948 A.M.A. RULES

DESIGNED BY W. S. BLANCHARD, JR.

PLANS BY W. S. BLANCHARD, JR.

SCALE 6"=1'-0"



SPECIFICATIONS

SPAN	27'-0"
LENGTH	18'-0"
EMPTY WEIGHT	450#
TOP SPEED	100 M.P.H.
CRUISING SPEED	90 M.P.H.
CEILING	18,000 Ft.
RANGE	400 Mi.
FUEL CAPACITY	8 GAL.
POWER	CROSLEY 25 H.P.

DRAWN BY: LEONARD WIECZOREK

At last—you can fly for less than you can drive your car

by ROBERT McLARREN

MOONEY M-18

THE long time controversy over whether or not a single-seat lightplane has volume commercial appeal is receiving its most recent test in the Mooney M-18, now in production. But more than this is the test of low price bringing volume production, the essential theory behind Mooney Aircraft Inc. and plans for its tiny craft.

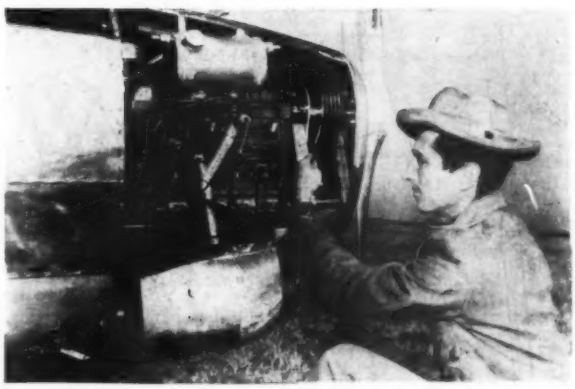
It has now become painfully evident that volume production in the personal aircraft business does not produce lower sales prices, with the originally $6000 *Navion* now crowding the $10,000 mark, the Cessna 195 now at $13,750 and the Temco Swift up $500 to $4495. Each price increase has moved the airplane out of the financial hands of an additional large segment of the public with most of us seeing it slipping farther out of our reach.

To answer this trend, veteran designer Albert W. Mooney has placed the lowest price tag on his airplane of any now in production: $1600! That this is not another rosy dream is evident from the fact that W. S. Grant, Santa Monica, Calif. distributor has already taken delivery on the first airplane and others are now ready at the Wichita, Kansas plant.

The Mooney M-18 is a single-seat low wing monoplane along the general lines of the wartime Culver target planes, which Mooney also designed. The fuselage is welded steel tubing fabric covered; the wings are of wooden construction, plywood and fabric covered; the engine has a formed metal cowl; and the tricycle landing gear is fully retractable! The cockpit contains a sliding canopy and a full set of standard instruments including airspeed indicator, compass, altimeter, tachometer, oil pressure gage, oil temperature gage, ammeter, water temperature gage and fuel gage: all for $1600! Assuredly, here is an aeronautical bargain!

What is the secret of this low price for a full size airplane that gives its pilot so much? The answer lies in a number of engineering and production factors, chief of which is the use of a Crosley Cobra engine, the same engine used in the Crosley automobile. This tiny engine develops only 25 hp, but Mooney believes and has proved that is enough to haul one man around in the sky. The engine is geared down to the prop by a set of "V" belts which run over a small disc on the engine drive shaft and a large disc on the prop shaft located directly above it. A Sensenich fixed pitch prop of laminated wood is used.

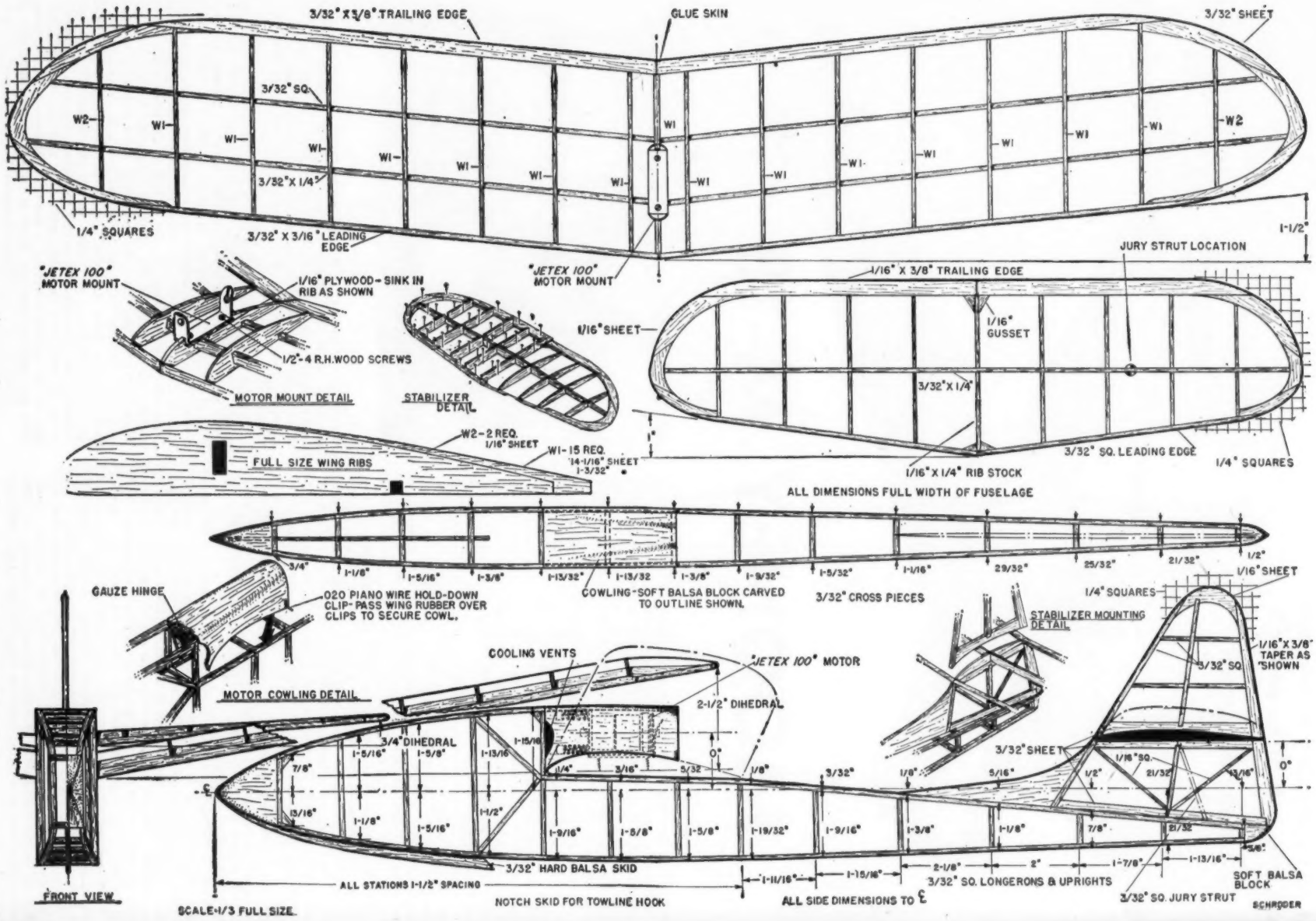
Some idea of what use this tiny engine means to the air traveler is the fact that W. S. Grant flew his Mooney from Wichita to his home field at Santa Monica—a distance of 1200 miles—at a cost of a little over six dollars! And that, without



benefit of complex calculations, works out to just half of one cent per mile! The Mooney has repeatedly been flown 100 miles for only 50 to 60 cents, a distance it would cost you from $1.50 to $2.00 to cover in an automobile. And when flying is *cheaper* than driving, then brother we've got a new day adawnin'!

But the M-18 is more than just a cheap airplane. First, it is one of the most stable and safe airplanes ever offered. Because it has only one passenger and its fuel supply is located directly on the c.g., no trim changes are ever required in flight. This means the M-18 is in perfect trim both power-on and power-off and that no trim tabs are required, removing this otherwise important control from the list of things the pilot must think about. All the trim of the airplane is handled by the controllable horizontal stabilizer, the setting of which is interconnected with the landing flaps and cockpit controls. This provides exceptionally good stall characteristics. The stall is preceded by ample warning, and after it has developed there is no tendency for the airplane to roll in either direction; it merely drops its nose and recovers with only slight loss of altitude. Due to this gentle behavior in the stall, Mooney says the plane does not need or use any kind of stall indicator, now one of

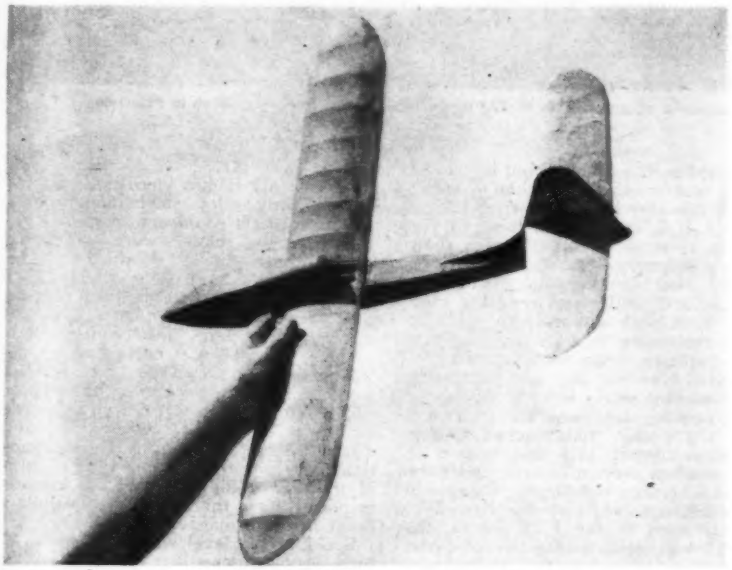
(*Turn to page* 59)

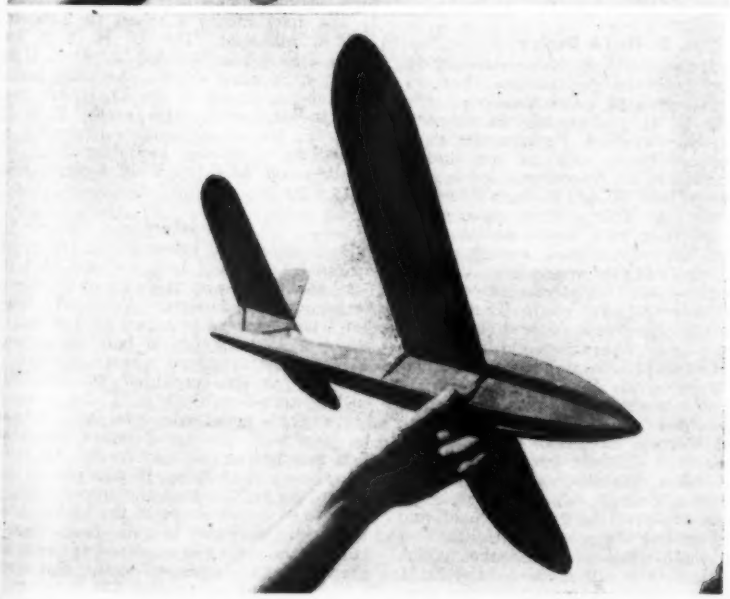

3/32" X 5/8" TRAILING EDGE
GLUE SKIN
3/32" SHEET
3/32" SQ.
W2
W1
3/32" X 1/4"
1/4" SQUARES
3/32" X 3/16" LEADING EDGE
1-1/2"
"JETEX 100" MOTOR MOUNT
JURY STRUT LOCATION
1/16" X 3/8" TRAILING EDGE
1/16" PLYWOOD - SINK IN RIB AS SHOWN
1/2" - 4 R.H. WOOD SCREWS
MOTOR MOUNT DETAIL
STABILIZER DETAIL
1/16" SHEET
1/16" GUSSET
3/32" X 1/4"
W2 - 2 REQ. 1/16" SHEET
W1 - 15 REQ. 14-1/16" SHEET 1-3/32"
FULL SIZE WING RIBS
3/32" SQ. LEADING EDGE
1/4" SQUARES
1/16" X 1/4" RIB STOCK
ALL DIMENSIONS FULL WIDTH OF FUSELAGE
3/4" 1-1/8" 1-5/16" 1-3/8" 1-13/32" 1-13/32 1-3/8" 1-9/32" 1-5/32" 1-1/16" 29/32" 25/32" 21/32" 1/2"
GAUZE HINGE
.020 PIANO WIRE HOLD-DOWN CLIP - PASS WING RUBBER OVER CLIPS TO SECURE COWL.
COWLING - SOFT BALSA BLOCK CARVED TO OUTLINE SHOWN.
3/32" CROSS PIECES
1/16" SHEET
1/4" SQUARES
STABILIZER MOUNTING DETAIL
1/16" X 3/8" TAPER AS SHOWN
3/32" SQ.
MOTOR COWLING DETAIL
COOLING VENTS
"JETEX 100" MOTOR
2-1/2° DIHEDRAL
3/4° DIHEDRAL
3/32" SHEET
1/16" SQ.
0°
7/8" 13/16" 1-1/8" 1-5/16" 1-5/8" 1-13/16 1-15/16 1-1/2" 1-9/16" 1-5/8" 1-5/8" 1-19/32" 1-9/16" 1-3/8" 1-1/8" 7/8" 21/32
1/4" 3/16" 5/32 1/8" 3/32" 1/8" 5/16" 1/2" 21/32 13/16"
3/32" HARD BALSA SKID
ALL STATIONS 1-1/2" SPACING
1-11/16" 1-15/16" 2-1/8" 2" 1-7/8" 1-13/16" 3/8"
3/32" SQ. LONGERONS & UPRIGHTS
SOFT BALSA BLOCK
3/32" SQ. JURY STRUT
FRONT VIEW
SCALE-1/3 FULL SIZE.
NOTCH SKID FOR TOWLINE HOOK
ALL SIDE DIMENSIONS TO ℄
SCHROEDER

THE SWISH

by BILL WINTER

This model is powered by a simple and safe jet unit—results are excellent





THE *Swish* is a free flight jet-propelled airplane developed especially for the new *Jetex* power unit recently invented in England and now becoming available in this country. For the writer, this ship proved the most interesting and unusual project yet encountered—stick around and see what we mean!

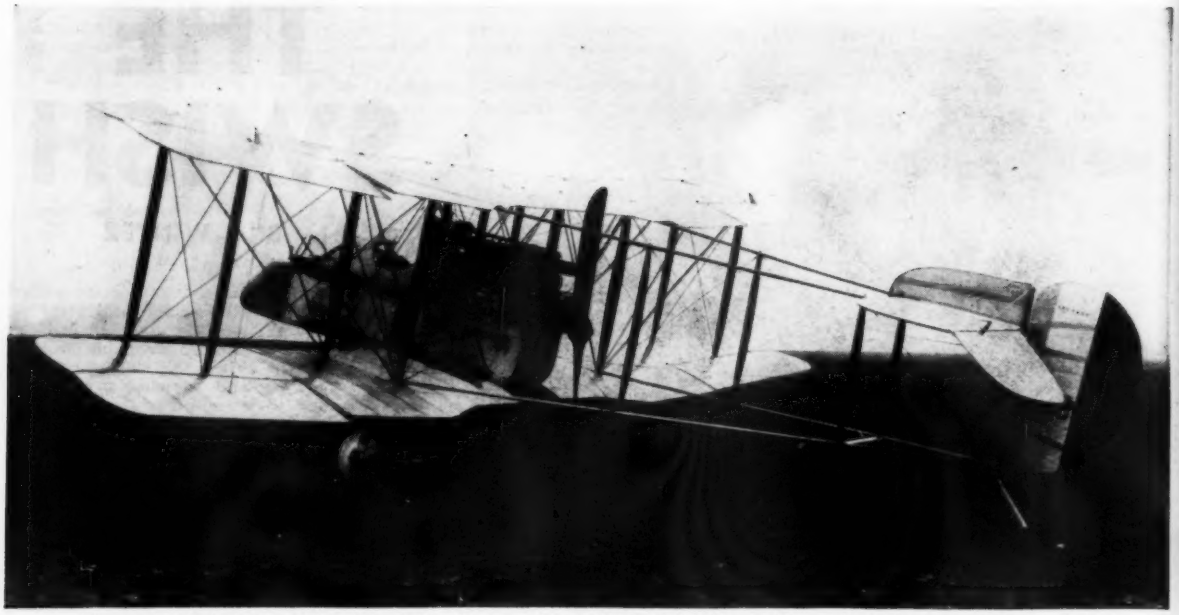
The *Jetex* motor is manufactured by Wilmot, Mansour & Company Ltd., Salisbury Road, Totton, Hants, England, and a fiendishly clever gadget it is! It is at present available in two sizes: *Jetex 100* for models of 18″ to 30″ span, and *Jetex 200* for ships of 24″ to 42″. The smaller unit has a thrust of 1 oz. lasting for 20 seconds; the larger unit a thrust of 1-3/4 to 2 oz. for 20-40 seconds. In appearance the unit is, roughly speaking, an aluminum cylinder of about 1 inch diameter, with a removable end held firmly in place by three strong spring-loaded clamps. The fuel is a 3/4″ long solid, cylindrical in shape to slide into the cylinder, and hard and brown, resembling a slice from a wood dowel. The small *Jetex* takes one of these charges, the bigger unit two charges. A fuse is coiled to fit against the charge inside the cylinder with one end protruding through a small hole in the center of the removable end of the cylinder. The escaping gases passing through this hole provide the thrust.

A lot of questions will spring to mind. How does the fuel burn? Is it safe? Does the unit get hot? How strong is that thrust when it comes to flying a model? First of all, the fuel was found quite safe and simple to handle according to directions in the instruction booklet. It burns with a gentle hissing sound, more like a swish when the ship is in flight (from whence the name "Swish"). The unit does get hot but not dangerously so. As long as the metal of the unit does not come into direct contact with paper or wood there is no danger of the heated metal igniting the structure. While it does get too hot to handle with the naked hand, the heat is far less than one would expect. As to thrust, the *Jetex* seems incomparably better than using a CO_2 capsule as a straight jet, but not as "hot" in our estimation (at least in this size model) as the performance of a good CO_2 engine. It has, however, ample thrust for good sport flying and definitely is not a disappointment. This observation is based on the performance of the *Jetex 100;* the larger unit was not available at the time of these experiments.

A point that should be made immediately is that the first model followed closely the suggestions of the *Jetex* booklet; it is possible to develop other sized models—for example, it may be possible to fly this same size ship with a larger unit, or to experiment further with different size and weight ships.

In designing a ship for the *Jetex* it is essential to keep in mind the proper cooling and ventilation of the powerplant. A minimum space of 1/16″ must be left between the engine and any cowling or side of a fuselage. A good air flow seems essential for

(*Turn to page* 42)



More power, better streamlining, improved performance of graceful D. H. 1A; it saw little service in France, much in Palestine

WORLD WAR I

by ROBERT C. HARE

LAST month we discussed the origin and details of the D. H. 1 two-place pusher which first cruised British skies when World War I was but a few months old. While this ship turned out extraordinarily good performance for its time, its pusher format was rapidly becoming obsolete. Aeronautical science was gathering momentum under the urgency of war, and designers were turning to the tractor type as rapidly as they could apply theories to practice.

But good tractors were slow in coming, and before they could be made a weighty factor in the rapid development of aircraft utility, a gadget fixed to the nose of a stunting monoplane came roaring out of Germany to upset the best laid plans of Allied designers. The gadget was the synchronizing gear fitted to the nose of Fokker's E. I monoplane—a simple mechanism that revolutionized the application of airplanes to warfare.

With the enemy's planes spewing lead in the direction of flight with a machine gun firmly attached to and aimed by steering the plane, the new Allied biplane tractors were rendered helpless. The solution was to develop a similar forward firing airplane, but there was no time for this. The only hope of offering resistance—at least for a while—was to resurrect the pusher, improve it, and make the most of it until new types could be developed.

We can't say that Geoffrey de Havilland anticipated such a situation, but it is a fact that he was ready for it when it came. The Air Ministry knew of the reputation of the D. H. 1, and held high regard for it as far as it went. But it lacked some of the performance and ruggedness the Ministry was looking for. This, de Havilland did anticipate by going over the D. H. 1 with a fine-tooth comb to reduce resistance to a minimum, then adding military equipment according to the customs of the day and increasing horsepower by nearly 60%.

This new airplane was known as the D. H. 1A, a ship that reached limited production during 1915 and turned in some excellent service records under the most unfavorable conditions. Because it was outclassed—at least theoretically—by such ships as the F. E. series, the D. H. 1A was relegated for the most part to operations in and around Palestine.

D. H. 1A Design

Outwardly, the D. H. 1A appeared little different from its predecessor, but on closer examination detail improvements over the D. H. 1 described last month were readily evident. Perhaps the most outstanding change was the installation of a Beardmore 120 hp watercooled engine in place of the 70 hp Renault fitted to the prototype. This engine change required addition of a water radiator. To preserve the streamlined aspect of the nacelle, the radiator was placed directly behind the pilot. This placement probably helped keep the pilot warm. To improve the pilot's vision forward, and to provide a better gun operating platform, the gunner's cockpit coaming was cut much lower than on the D. H. 1.

A post-mounted Lewis machine gun was provided for the gunner in the front cockpit. Certain models of the D. H. 1A also provided a Lewis gun for the pilot. This weapon was mounted on the right side of his cockpit, where it could be aimed to fire over the gunner's head, and parallel to the wings on the right.

The small, wing-like air brakes which were attached to either side of the D. H. 1 nacelle, were eliminated in the production D. H. 1A design. It is probable that these air brakes were not only ineffective, but added weight and production time which could not be spared.

Two types of rudders were used on the D. H. 1A. Early models retained a rudder shape almost identical to the D. H. 1 rudder, except that the area was reduced from 16.15 sq. ft. in the D. H. 1 to 15.6 sq. ft. in the 1A. The reduction was achieved, in part, by cutting down the balancing portion. Later D. H. 1A rudders were less rounded on top, their upper edge taking the form of a straight line leading to the fin.

D. H. 1A's refinements, as far as streamlining was concerned to offset the addition of military equipment and its increase in power, gave the modified ship quite a boost in performance.

Speed at sea level was increased to 89 mph, 11 mph more than that of the D. H. 1. The new model climbed to 3,500 ft. in 6.45 minutes. The D. H. 1 in its original form reached that height in 11.25 minutes. Because of a heavier wing loading, landing speed of the D. H. 1A was 49 mph—against 41 mph for the D. H. 1.

D. H. 1A gross weight—including a disposable load not including fuel, of 420 lbs—was 2,400 lbs. Weight empty was 1,672 lbs.

Structure

Both upper and lower D. H. 1A wings spanned 41 ft. and had a chord of 5 ft. 6 in. Each wing was made up of a center-section to which outer right- and left-hand panels were attached at a dihedral angle of 3°. Incidence of both wings was 4-1/2° positive; there was no stagger.

Outer panels contained 12 full ribs each mounted on a pair of "I"-beam wood spars. Each panel was internally braced by four steel tube compression members tied together at the spar fittings by steel wire bracings. A nose rib was placed between the full ribs on the upper surface only to preserve shape of the airfoil. Unbalanced ailerons in all four panels carried the same rib sequence as the main planes, and were hinged to the rear spar.

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Fly A Mustang

by ROLAND G. SCHMITT, JR.

OF all the fighters that took part in the last war, none has captured the interest or gained the respect as has the sturdy little P-51. Designed originally as a reconnaissance fighter for the British (to replace the aging *Lysander*), its first claim to fame was the fact that it was a "hundred days' wonder" —imagine, only 100 days from conception to acceptance flight! Later our Army Air Forces accepted this ship as a medium altitude fighter, and following this as the A-36 or attack version.

Not content with merely having a good airplane, the AAF and North American began the series of improvements that led to the P-51 D. Replacing the original Allison engine with a Packard built Rolls-Royce, changing the position and shape of the air scoops, and the addition of a dorsal fin and "bubble" canopy were only a few of the combat-dictated changes that went into the *Mustang* to make it the best of the war's all-purpose fighters. From the beach at Calais to 30,000 feet over Tokyo, the *Mustang*, loved by our airmen and feared and respected by our enemies, was your plane—no job too tough, no place too far, no opposition too keen. Protection for the B-17's over Berlin or Vienna—call the 51's! A new buzz-bomb site—a bridge in northern Italy—a troop train in Belgium—a German Armored column in Yugoslavia—an airfield outside Tokyo—call the 51's! Its versatility as an interceptor fighter, long range escort fighter, and bomb and rocket attack plane was unequaled by any other plane.

Our little model of this famed plane is built (in profile) to the scale of 3/8" to a foot. Construction is of all-balsa for ease of building and ruggedness. So grab your razor blades, sandpaper and balsa, and in no time at all you will have a gem of a model, both in flying and in appearance.

The fuselage is shaped from a sheet of 1/16" x 2 1/2" x 10 1/4" clear firm balsa. This shape can be most easily obtained by tracing (with carbon paper) the heavy outline as shown on the side view. Care must be taken to cut the slot for the stabilizer accurately, remembering that the stabilizer is only 1/32" thick. Be certain also that the front is square with the motor cut out. Round off all edges with sandpaper. Next, cut two discs of 1/8" sheet, 7/8" in diam. From the center of one, cut a 3/8" x 3/8" square, then cement this disc to the front of the model, reinforcing it with small triangular blocks. The 3/8" x 3/8" square that you cut from the disc is then cemented to the center of the other disc and set aside to dry. The windshield frame can now be made from 1/16" x 1/16" strips and cemented in place and allowed to dry while you proceed.

The horizontal stabilizer and the elevators are next traced and cut from 1/32" clear unwarped sheet. Sand slightly and join with straight lengths of thin (.012) soft iron or copper wire cemented as shown on the drawing. Set aside to dry, and continue with the fin and rudder in a similar manner, but do not join these surfaces. Instead, cement the fin to the fuselage and allow to dry straight and true.

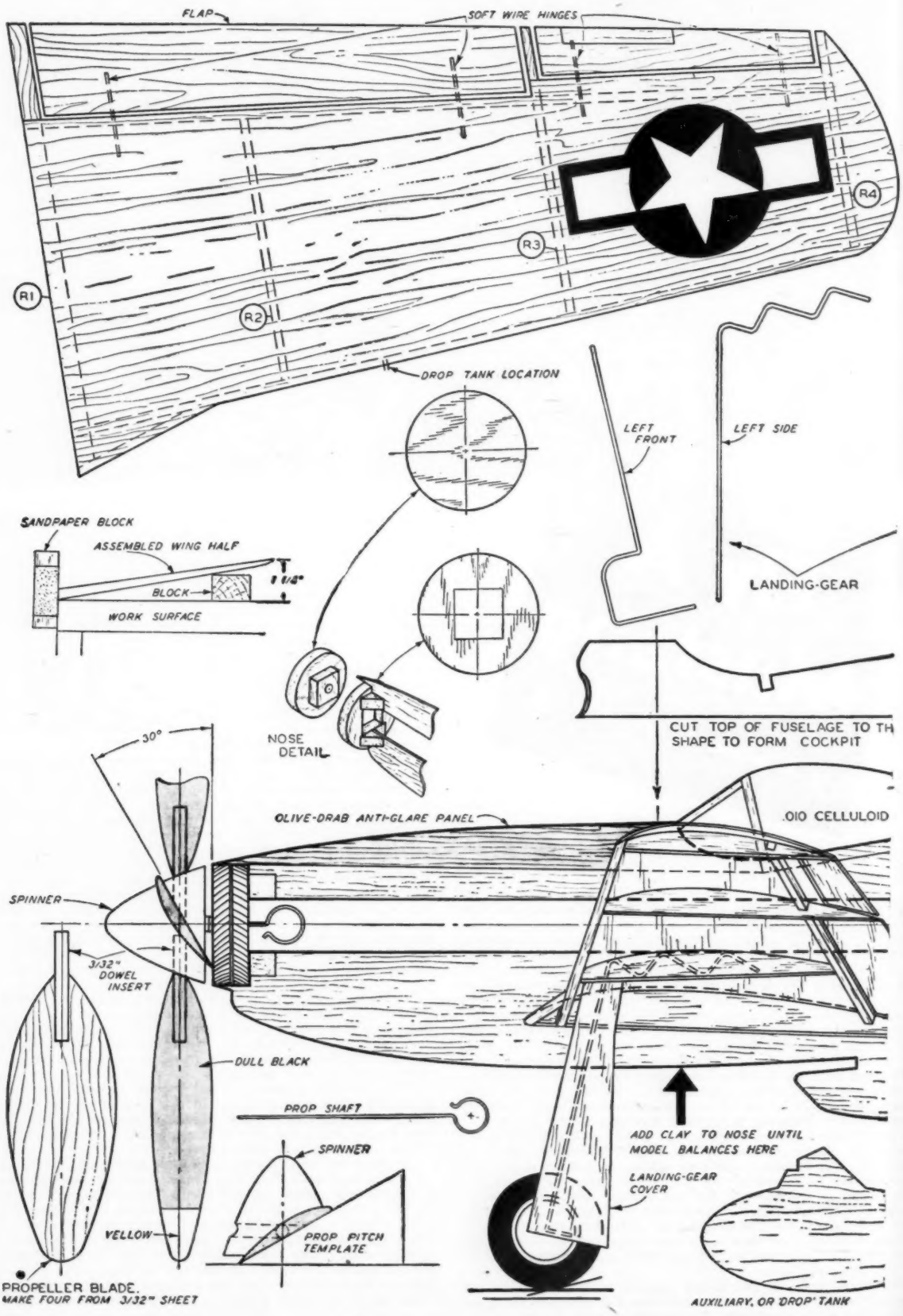
Then, insert and cement the assembled horizontal stabilizer and elevators in the slot provided, with the wire hinges on the bottom, and brace with the elevator fillets which are shaped from 1/8" square balsa. Be certain the tail surfaces are square to each other, and true with the fuselage. Check also to see that the fillet block or the fuselage does not interfere with the movement of the elevators. The rudder is then attached to the fin (on the top) and the fuselage (on the bottom) by means of the wire hinges. Cement well.

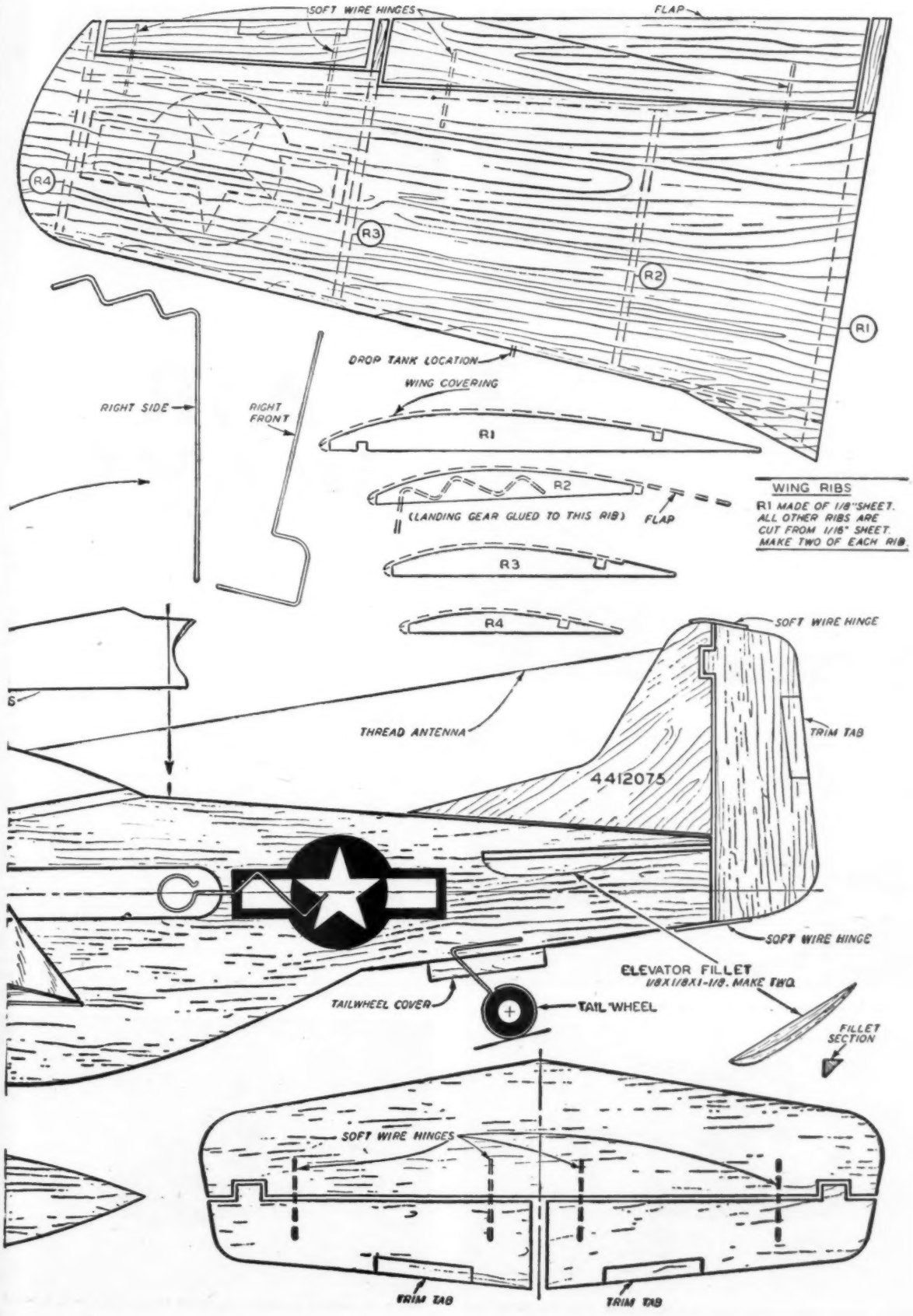
The "bubble canopy" is formed by cementing two sheets of flat thin celluloid which have been cut to shape to the top of fuselage and the windshield frame. Allow the celluloid to lap over the fuselage about 1/16". Bring the top edges together and cement with a thin bead of cement. Care must be taken in this operation to insure a neat job.

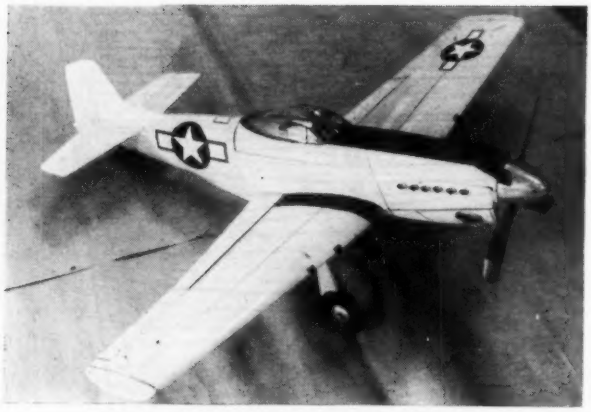
The rear rubber hook and tail "wheel" can now be formed from .023 music wire and cemented into place on the fuselage. Fill in the center of the tail "wheel" frame with a 3/8" diam. disc of 1/16" balsa and cement in place. After the cement is dry, round off the edges to form a tire.

Cut next two wing panels from unwarped 1/32" sheet. Mark on one side of each the rib and spar locations, making certain you have both a right and left wing. The ribs are cut as shown on the plan from 1/16" or from 1/8" sheet, and the spars are 1/16" x 1/16" strips cut to length. Cement the spars first to the wing sheet, not forgetting the extra sub-spar at the jog in the leading edge. Note also that the front spar is not cemented to the wing sheet from Rib 1 to the "jog" in the leading edge. The ribs are next cemented in place and round off the leading edge. Then presto—a wing! The flaps and ailerons are also cut from

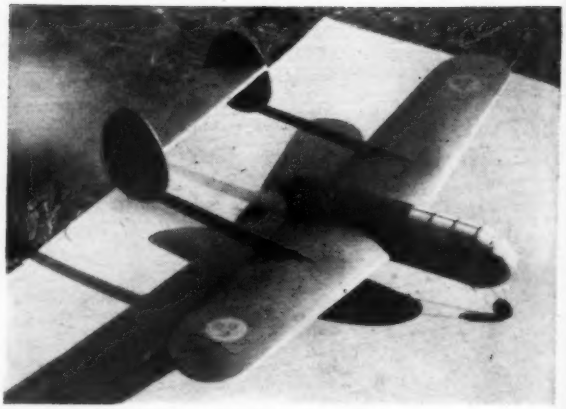
(*Turn to page* 62)


FLAP
SOFT WIRE HINGES
R1
R2
R3
R4
DROP TANK LOCATION
LEFT FRONT
LEFT SIDE
LANDING-GEAR
SANDPAPER BLOCK
ASSEMBLED WING HALF
BLOCK
1 1/4"
WORK SURFACE
NOSE DETAIL
CUT TOP OF FUSELAGE TO TH SHAPE TO FORM COCKPIT
30°
OLIVE-DRAB ANTI-GLARE PANEL
.010 CELLULOID
SPINNER
3/32" DOWEL INSERT
DULL BLACK
PROP SHAFT
SPINNER
PROP PITCH TEMPLATE
YELLOW
PROPELLER BLADE.
MAKE FOUR FROM 3/32" SHEET
ADD CLAY TO NOSE UNTIL MODEL BALANCES HERE
LANDING-GEAR COVER
AUXILIARY, OR 'DROP' TANK

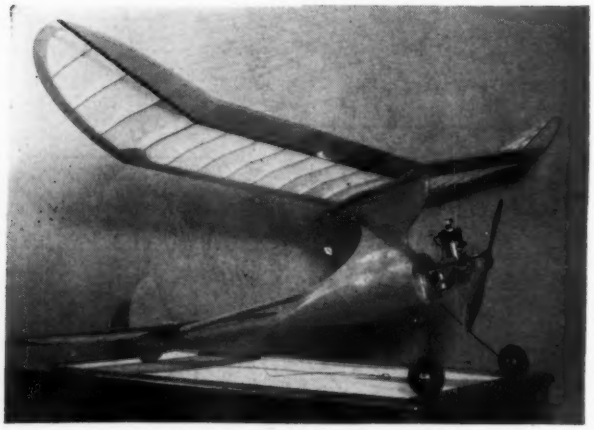

SOFT WIRE HINGES
FLAP
R4
R3
R2
R1
RIGHT SIDE
RIGHT FRONT
DROP TANK LOCATION
WING COVERING
R1
R2
(LANDING GEAR GLUED TO THIS RIB)
FLAP
R3
WING RIBS
R1 MADE OF 1/8" SHEET. ALL OTHER RIBS ARE CUT FROM 1/16" SHEET. MAKE TWO OF EACH RIB.
R4
SOFT WIRE HINGE
THREAD ANTENNA
TRIM TAB
4412075
SOFT WIRE HINGE
ELEVATOR FILLET
1/8X1/8X1-1/8. MAKE TWO.
TAILWHEEL COVER
TAIL WHEEL
FILLET SECTION
SOFT WIRE HINGES
TRIM TAB
TRIM TAB



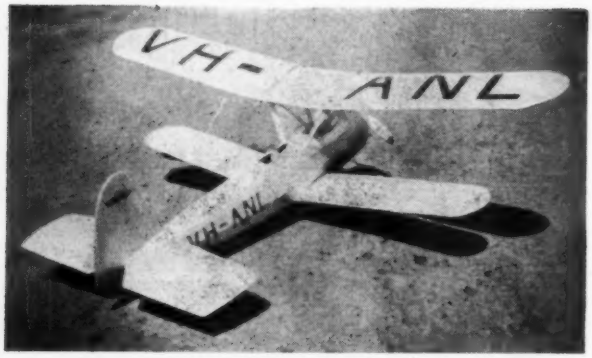
No. 2 Prize winning P51 by Major Jack Wheeler



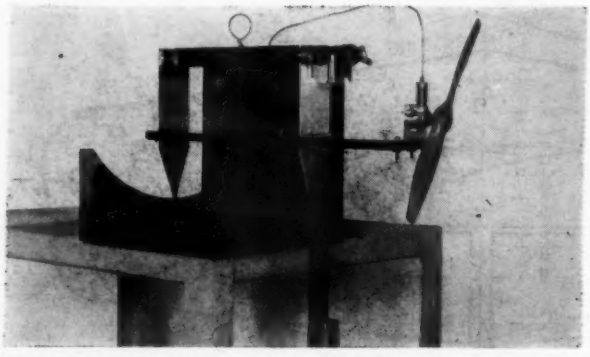
No. 1 Swedish free flight rocketplane by Cecil Torner has 35" span



No. 3 Tip Smiley's original design, the *Drifter 54*



No. 4 *Rambler* from M.A.N. plans flies well for Jimmy Hyland



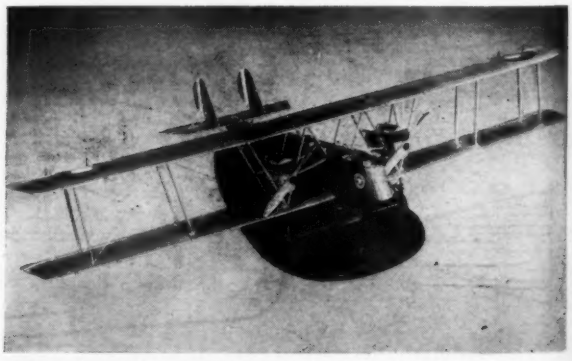
No. 5 Torque stand, midget size by J. H. Maxwell, with OK-CO2 on test

AIR WAYS

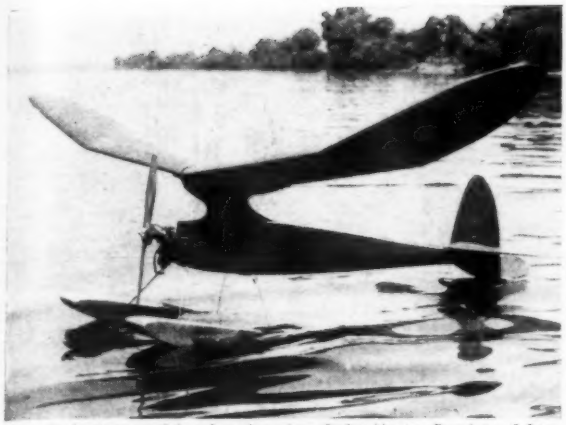
ELSEWHERE IN THIS ISSUE will be found an account of the highly successful 1948 Nationals. By all standards this was a very satisfactory meet, yet the turnout of contestants was disappointingly small. Unofficial estimates showed there were 850 entrants as against over 1000 last year. Why is interest thus dropping off? The meet was held in the most central part of the country possible and was equally accessible to fliers from every locality. Since advance publicity clearly indicated that board and lodging would be available at very low cost, contestants were assured there would be no gouging on this score.

We would like to receive from our readers some ideas on how the Nats entry list next year can be brought back to the 1500 or so contestants that is generally considered a good attendance. And you modelers who should have gone this year, but didn't, let us know why. Were you afraid competition would be too tough? Not enough prizes and merchandise? Wasn't publicity gotten out early enough? Too far to travel? Or, can it all be blamed on our common enemy: old High Cost of Living? Write in and give *your* opinion.

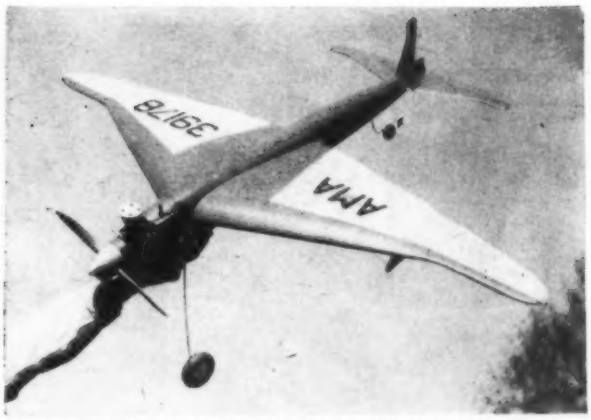
WE HAVE BEEN ASKED to correct a misapprehension that has arisen relative to the new National Club Champions, the *Oakland Cloud Dusters*. The names of Mom and Pop Robbers have been closely associated with this group for so long that most modelers have gained the impression that Mom and Pop pay most of the club expenses, that they probably are the scientific geniuses behind the group, and even that without their help the *Dusters* would soon fade into oblivion. Harvey Robbers Sr. feels it is high time to correct this erroneous impression and has enlisted our aid in doing so. He writes: "'Sponsored by Mom and Pop Robbers' cannot be a true statement. You see, we did not pay their expenses to the Nationals



No. 6 Remarkably accurate scale model Martin MB-1 by R. S. Nevin



No. 7 Antique model and engine gives Cadet Morton Ray lots of fun



No. 8 Bob Haines gets fine results from this *Drone*-powered stunter

News of Model Airplane Experimenters All Over the World

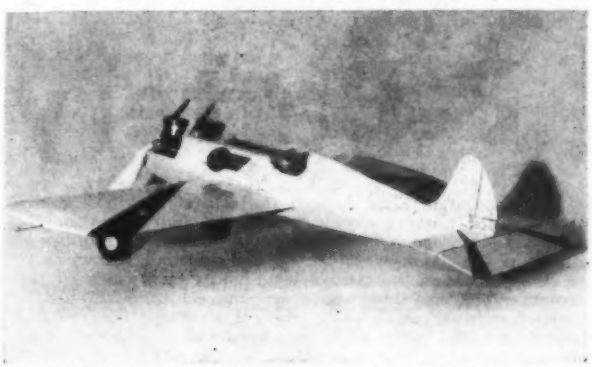
so we can not be termed sponsors. The many years in which they have enjoyed the hospitality of our home as a rendezvous and meeting place, and the years of maintaining a club office and publicity channel for them have been well repaid by the knowledge in model aeronautics which these experts have imparted to Mr. and Mrs. Robbers. It is with relief that we now feel that our obligations to this group have been paid in full now that they are the National Champions and have set up their own policy and meeting places and will carry out their publicity themselves."

WAKEFIELD ELIMINATIONS were held at the Nats this year, of course, but many readers would like to have had these eliminations more decentralized. John Dooley, Pres. of the *Crossville (Tenn.) Model Airplane Club*, writes that he has always dreamed of attending a Wakefield Eliminations but has never been able to do so because they are always held too far away. He says, "Would you appeal for us that the elimination be given to four districts. For example, if the Southeastern elimination for the Wakefield was held in Atlanta in conjunction with the Southeastern Contest, I could attend. Or at Nashville in conjunction with the Tenn. State Meet, or even here in conjunction with the Volunteer State Free-Flight. The average modeler who believes that to make the Wakefield team is the climax of modeling is just an average guy and can't scurry off to Chicago, Olathe or some such place. If they woud have a Western, an Eastern, a Midwestern and a Southeastern elimination, most modelers could make one of them and at least get a shot at the Wakefield Cup." We feel John has something here and that his comments pretty well cover the feelings of other readers who have written us along these lines.

FLYING OUTLAWED IN EVANSTON (ILL.). Another community has banned model flying within its borders and it seems the time has come to compile a list of cities where flying is still practiced with the sanction and cooperation of city authorities. Then, when a no-flying ordinance is due for hearing in some other community, the modelers can point to cities where flying is encouraged, and can get in touch with the authorities in these "enlightened" localities to see how it is done.

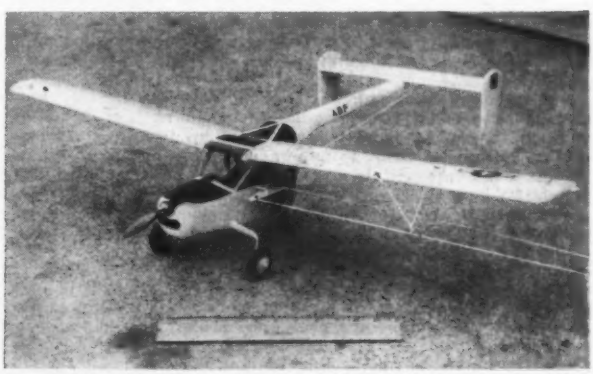
(*Turn to page* 48)

No. 9 16 ft. giant by Hubert Entrop weighs 95 oz., has *Orwick 64*

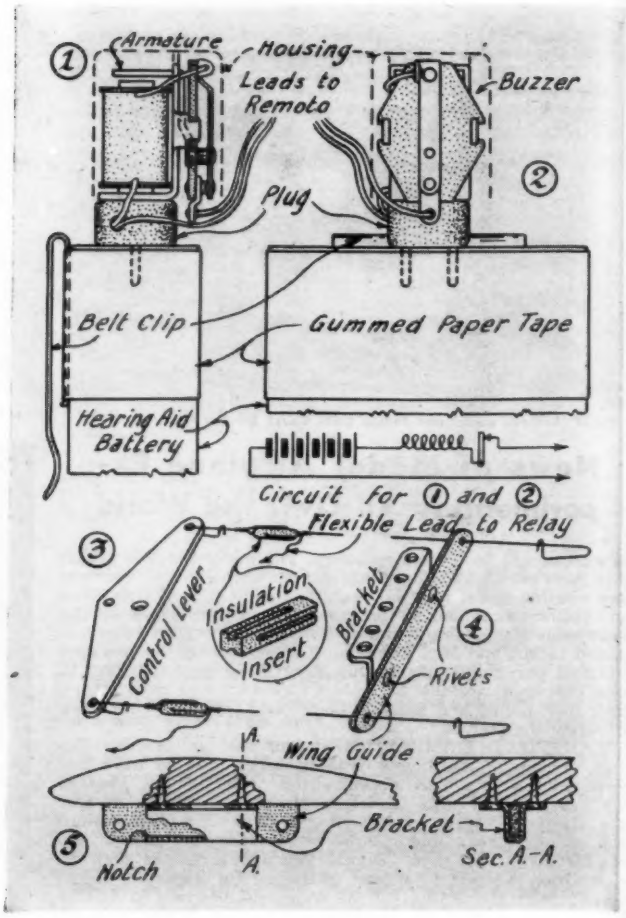


No. 10 Another M.A.N. plan, *Hot Rock* is flown by Paul Biegen

No. 12 Wesley John (left) and friends with favorite models



No. 11 Edgar Hayden sent this shot of Johnny McDonald's *Boeing L15A*



by RAY RUSHER

B-Battery Protector

IN THE operation of a *Remoto U-Reely* control it is easily possible for a short circuit to develop and ruin your B-battery in short order. Short circuits can occur at a number of points—in the flexible leads from the control lever wires to the relay, between the control lever wires themselves (if the insulation between these wires and the control lever breaks down), or from one wire to the other where they extend through a metal wing guide and insulation sleeves are provided on the wires. Sometimes these sleeves slip out of position and permit contact between the wires and the guide. Short circuits can also occur anywhere along the enameled flying wires due to excessive chafing or scraping against each other or against metal objects, etc. Then again foreign matter may get into the *U-Reely* housing and short circuit the brushes or collector rings.

Due to their high voltage, B-batteries are relatively expensive so a short circuit indicator or alarm is a valuable addition to your *Remoto* control. Such an indicator is very simple—merely a buzzer mounted on the *Remoto* (as in photo) and connected in series with the battery. It is immaterial which wire you connect it in.

The battery operates the buzzer whenever there is any kind of short circuit between the buzzer and the relay in the plane. It even indicates a short in the flexible leads from the battery (usually carried in the pilot's pocket) to the *Remoto*, if the buzzer is mounted at the battery. Drawings 1 and 2 show one way of doing this and a method for mounting the battery on a belt clip for convenience in carrying the battery so that the buzzer need not be inside your pocket. If you prefer to mount the buzzer on the *Remoto* housing, one of the screws that holds the two housing halves together can serve as a mounting for it.

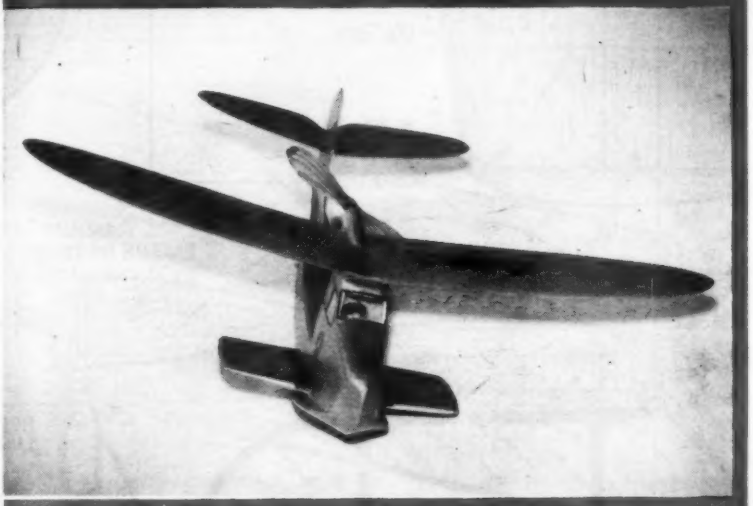
Now for the buzzer specifications. It should have high enough resistance, measured in ohms, to minimize drain on the B-battery in case of a short circuit. At the same time its resistance must be low enough so that it can operate on the occurrence of a short circuit but will not buzz when the relay in the plane operates. A resistance of 300 or 400 ohms is about right for most circuits. Usually the flying wires offer 200 or 300 ohms resistance and the buzzer should have a little higher resistance. The relay must be relatively sensitive—about 2000 to 7000 ohms usually being satisfactory for 45 volt operation. Relays with 2000 to 4000 ohms resistance will also operate on a battery of 22½ or 30 volts.

The reason for not having the buzzer operate when the relay does is two-fold; (1) to avoid a "short circuit alarm" at that time; (2) to prevent a pulsating current to the relay. A buzzer includes a circuit breaker that causes the buzzer coil to be alternately energized and de-energized as the buzzer armature vibrates. If a selected buzzer doesn't quite meet the requirements it is sometimes possible to adjust its contact, or bend its contact or armature springs, to get the desired result.

As to construction of the buzzer, most of those readily available, including the midgets, have too low a resistance value. However, a midget can be rewound with about 530 ft. of No. 38 wire (enameled copper) to get the desired value. Also, midget telephone relays are sometimes available with 300 or 400 ohm ratings. These relays usually have a "normally closed" and a "normally open" set of contacts. Connect the normally closed contacts in series with the relay coil and you

(*Turn to page* 56)

TADPOLE



by HOWARD G. McENTEE

Try this miniature flyingboat for real fun

MODELERS who have built and flown model seaplanes insist that flying over water has all other types of modeling beat. After hours of experiment with our *Tadpole* we certainly agree. Land flying surely offers no such thrill as can be had from the sight of a model seaplane skimming over the water with foaming wake trailing behind, then climbing smoothly upward, motor humming quietly. And of course the climax is a smooth landing (preferably downwind, as the added speed causes the model to skip over the surface in the most realistic fashion) without turning upside down!

The little model was designed strictly for sport flying and realism. The only departure from present day seaplane practice was the use of sponsons instead of the more common wingtip floats. The latter are a liability in models; they are easily damaged, and moreover their action on the water is poor because they tend to dip in as the model taxis and cause "water loops". Sponsons on the other hand are very rugged and, more important, they aid rather than hinder the model's seagoing qualities.

It goes without saying that a model of this sort should be thoroughly waterproofed. In our case we went the limit in this direction. The model is built entirely of sheet balsa without any framework. This style of construction, long our favorite for such little planes, is fast to make and is puncture-proof. After the woodwork was finished and smoothed with the finest sandpaper, the entire model was covered with the lightest weight model tissue obtainable. Everyone to whom we show the model asks, "Well, why not cut some of the wood away and save weight?" Save weight it certainly might, but we would then lose the ruggedness and freedom from punctures, splits and tears which we sought.

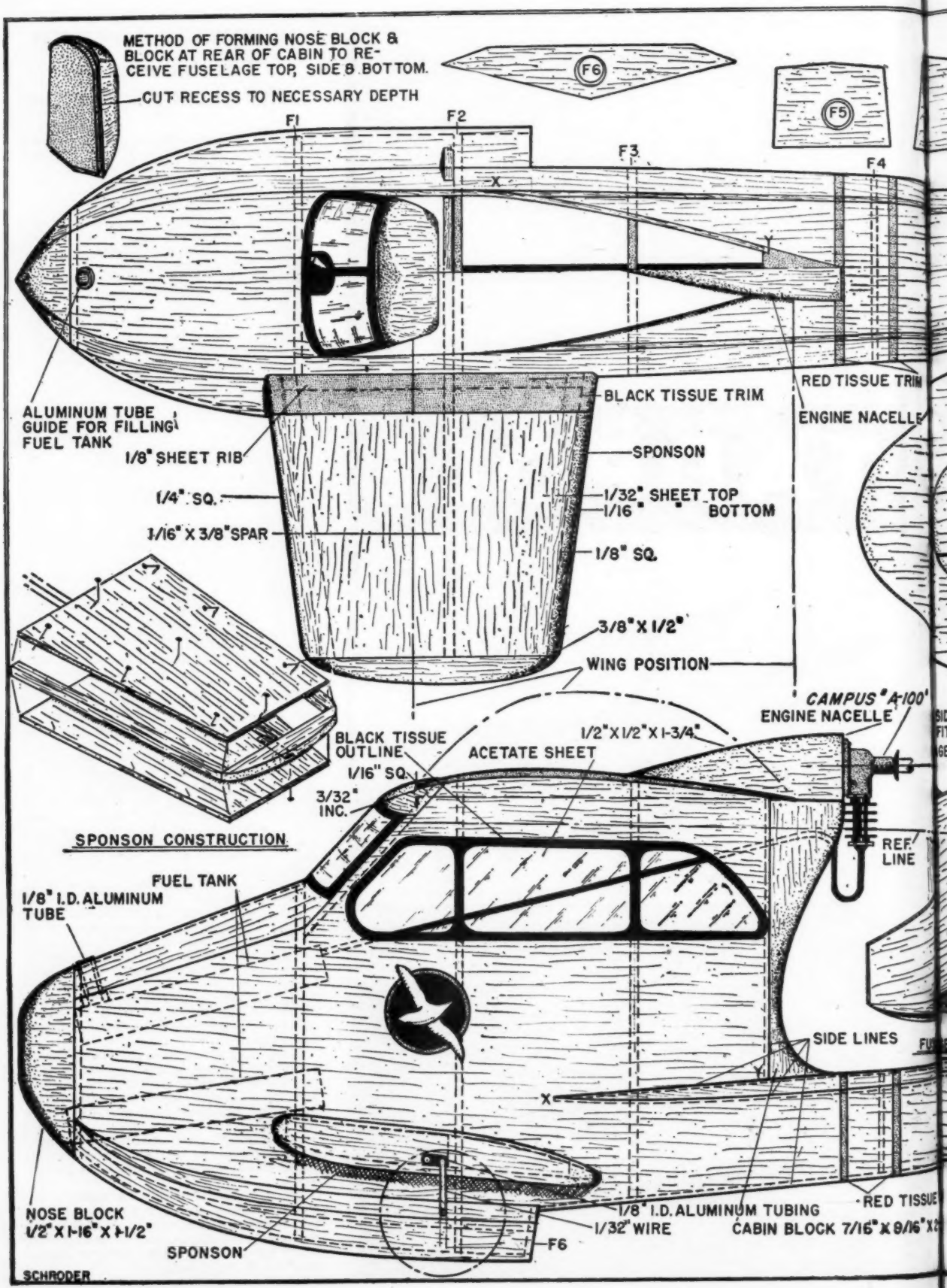
The object of the tissue covering, of course, is to make it possible to waterproof the model with only a few coats of thinned dope. Balsa wood soaks up dope like a sponge, especially in the very soft grades required for a model like this. Using the paper, however, only three coats of dope will do a fair job of waterproofing, and all dope we used was thinned 50-50 so it would brush on smoothly.

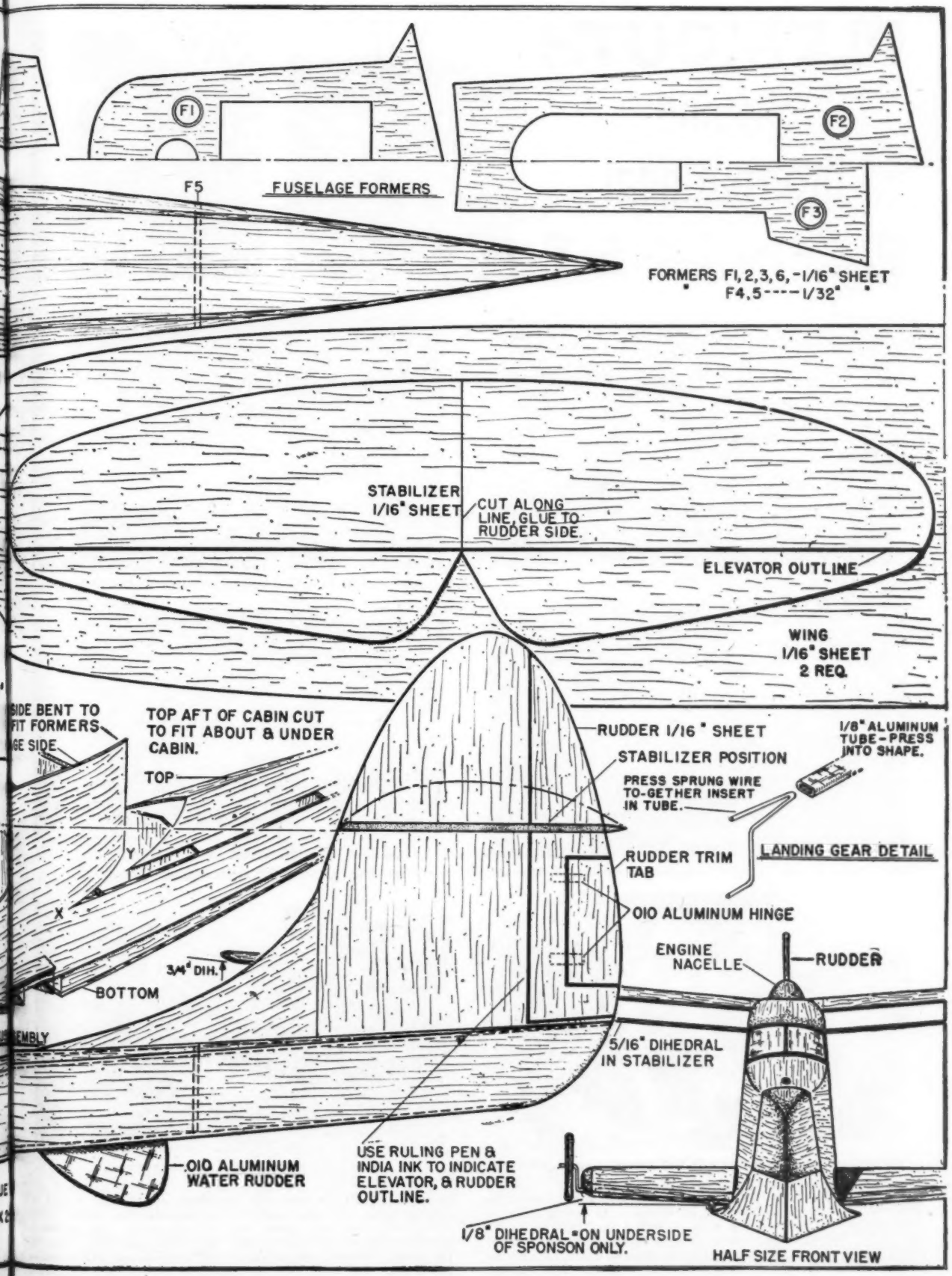
The finished model weighs exactly 1.5 oz., and at a rough estimate probably .3 oz. of this is waterproofing—quite a weight penalty but a necessary one if you wish to fly your plane off water for several hours as we have done on occasion, suffering the inevitable dunkings, yet have a model which can stand such treatment without soaking up water and becoming unflyable.

Wood used throughout the model should be of the lightest grade you can obtain, but the wood must of course be selected with care, as pithy or punky wood, while light, has practically no strength. Even though this light material is used the paper covering adds a great deal to the strength; if the paper is not used the wood must be either thicker or of a stronger and heavier grade.

Since this could hardly be called a beginner's model, we will not go into detailed building instructions but will use the space available to describe construction tricks used, and of course to cover operation and flying details.

(*Turn to page* 68)


METHOD OF FORMING NOSE BLOCK & BLOCK AT REAR OF CABIN TO RECEIVE FUSELAGE TOP, SIDE & BOTTOM.
CUT RECESS TO NECESSARY DEPTH
F6
F5
F1
F2
F3
F4
X
ALUMINUM TUBE GUIDE FOR FILLING FUEL TANK
1/8" SHEET RIB
1/4" SQ.
1/16" X 3/8" SPAR
BLACK TISSUE TRIM
SPONSON
1/32" SHEET TOP
1/16" BOTTOM
1/8" SQ.
3/8" X 1/2"
WING POSITION
RED TISSUE TRIM
ENGINE NACELLE
CAMPUS "A-100" ENGINE NACELLE
1/2" X 1/2" X 1-3/4"
BLACK TISSUE OUTLINE
ACETATE SHEET
1/16" SQ.
3/32" INC.
SPONSON CONSTRUCTION
REF. LINE
FUEL TANK
1/8" I.D. ALUMINUM TUBE
SIDE LINES
X
NOSE BLOCK 1/2" X 1-16" X 1-1/2"
SPONSON
F6
1/8" I.D. ALUMINUM TUBING
1/32" WIRE
CABIN BLOCK 7/16" X 9/16" X
RED TISSUE
SCHROEDER


F1
F2
F3
F5
FUSELAGE FORMERS
FORMERS F1, 2, 3, 6, - 1/16" SHEET
F4, 5 ---- 1/32"
STABILIZER 1/16" SHEET
CUT ALONG LINE, GLUE TO RUDDER SIDE.
ELEVATOR OUTLINE
WING 1/16" SHEET 2 REQ.
SIDE BENT TO FIT FORMERS
GE SIDE
TOP AFT OF CABIN CUT TO FIT ABOUT & UNDER CABIN.
TOP
BOTTOM
3/4" DIH.
RUDDER 1/16" SHEET
STABILIZER POSITION
1/8" ALUMINUM TUBE - PRESS INTO SHAPE.
PRESS SPRUNG WIRE TO-GETHER INSERT IN TUBE.
LANDING GEAR DETAIL
RUDDER TRIM TAB
.010 ALUMINUM HINGE
ENGINE NACELLE
RUDDER
5/16" DIHEDRAL IN STABILIZER
.010 ALUMINUM WATER RUDDER
USE RULING PEN & INDIA INK TO INDICATE ELEVATOR, & RUDDER OUTLINE.
1/8" DIHEDRAL ON UNDERSIDE OF SPONSON ONLY.
HALF SIZE FRONT VIEW

PLYMOUTH Second International CONTEST

Processing at U-control Arena

Junior Point Winner Jack Hudspeth

Thad Banach, G. F. Rollo, M. Bainbridge, Bob Keough wait in line

James Richmond, tired out from flying, relaxes on Mrs. Richmond

Frank Manley, J. Williams, John Korta, Mario Gonzalez, Dan Thompson

Three Hays: Luther at left, James Hays, and Luther, Senior

Mr. and Mrs. Norm Christenson with Dick Rothermel and A. Pearson

Four modelers from Belgium unpack their planes

THE Plymouth Corp. held their second big annual meet in Detroit on Aug. 18-23, and in addition to entrants from practically every state the meet justified its "International" name by the fact that there were 40 foreign entrants from Belgium, Canada, Mexico, Cuba and Puerto Rico, as well as others from Hawaii, Alaska and the Canal Zone. This was an invitational meet in that only modelers with a past record of contest wins or who were successful in the many local Plymouth-sponsored meets run by Plymouth dealers were permitted to enter. There were 540 contestants, the cream of the model builders, competing for 142 trophies and prizes totaling $7,875. Top winners at the meet are listed on opposite page.

PLYMOUTH 2d INTERNATIONAL MEET

HIGH POINT WINNERS: *Open*—Frank L. Cummings. *Sr.*—Donald G. Hobel. *Jr.*—Jack Hudspeth.

RUBBER POWERED—INDOOR STICK: *Open*—1. Bill E. Atwood 1275.0; 2. Frank L. Cummings 1128.0; 3. Merrick S. Andrews 1106.0. *Sr.*—1. Carl Brewer 1008.8; 2. Erwin Rodemsky 1006.0; 3. Robert C. Wykes 912.1; *Jr.*—1. Raymond Wykes 862.6; 2. Martin K. Bainbridge 594.0; 3. Alex C. Chizmadia 525.0.

INDOOR CABIN: *Open*—1. Frank Cummings 1065.8; 2. Donald T. Donahue 1062.6; 3. Merrick S. Andrews 919.5. *Sr.*—1. George Xenakis 857.5; 2. Robert Wykes 737.3; 3. Carl Brewer 722.7. *Jr.*—1. Martin Bainbridge 397.8; 2. Raymond Wykes 292.0; 3. Haig Parchanian 260.0.

OUTDOOR STICK: *Open*—1. Edw. Naudzius, Jr. 1368.8; 2. Dick Korda 1074.2; 3. Otto E. Curth 984.9. *Sr.*—1. Robert Perkins 996.2; 2. Donald J. Robbers 865.4; 3. Robert Wykes 856.6. *Jr.*—1. Haig Parchanian 830.4; 2. Edgar C. Broom 669.2; 3. Fred N. Blount 591.6.

OUTDOOR CABIN: *Open*—1. Harold L. Stofer 1450.2; 2. Clarence F. Mather 1076.6; 3. Harry E. Wiegel 851.0. *Sr.*—1. Carl Redlin 1296.2; 2. Herbert Kothe 1045.2; 3. Jos. Kubina 756.6. *Jr.*—1. John Korta 827.2; 2. Fred N. Blount 686.6; 3. Raymond Wykes 660.4.

FREE FLIGHT GAS—CLASS A: *Open*—1. T. A. Burris & L. H. Mahieu (Team) 1331.5; 2. Keith Bousfield 1200.0; 3. Jerry L. Stoloff 975.6. *Sr.*—1. Don G. Hobel 1282.0; 2. Jason Hayward 887.9; 3. Roy Boone 792.1. *Jr.*—1. Thos. M. Moffitt 805.0; 2. Leonard Anderson 600.0; 3. Bernard J. Stock 406.8.

CLASS B: *Open*—1. Al Blatter 1357.0; 2. Jerome J. Schroeder 954.0; 3. Ernest Maynard 927.6. *Sr.*—1. Carl R. Wheeley 1278.0; 2. John Kavulich 1204.0; 3. Robt. A. Gardner 878.1. *Jr.*—1. Fred W. Morgan 924.8; 2. Rollin R. Levon 843.0; 3. John C. Humphreys 794.5.

CLASS C: *Open*—Dennis Davis 1210.4; 2. Merwyn D. Seaman 1228.1; 3. Robt .L. Holland 947.7. *Sr.*—1. Edward J. Lays 1314.1; 2. Don G. Hobel 770.0; 3. Edmund Morosky 728.4. *Jr.*—1. Jack Hudspeth 766.0; 2. Roger Barron 713.4; 3. Dan Dougherty 630.0.

CLASS D: *Open*—1. Gareth E. Treuter 1432.0; 2. Stuart P. Weckerley 1381.6; 3. George E. Ritter 1311.2. *Sr.*—1. Carl J. Randall 990.0; 2. Jos. Kubina 862.2; 3. James H. Ripken 663.2. *Jr.*—1. Thos. G. Diel 734.0; 2. Thos. M Moffitt 422.2; 3. Morris G. Pollock 397.6.

CONTROLINE—CLASS A: *Open*—1. Leonard A. Wagner 102.00; 2. Ronald S. Kirk 100.63; 3. Lew H. Mahieu & T. A. Burris (Team) 100.52. *Sr.*—1. Maurice Stanglin 102.12; 2. Thos. Baker 101.08; 3. Richard Rigney 94.00. *Jr.*—1. James Singleton 93.23; 2. Steven A. Jordan 87.77; 3. Crosley J. Fitton Jr. 85.35.

CLASS B: *Open*—1. Anthony J. Grish 119.24; 2. Edward K. Waters 113.52; 3. Walter H. Wincek 113.16. *Sr.*—1. Stanley Grish 116.16; 2. Chas. E. Hallum 111.90; 3. James Richmond 107.04. *Jr.*—1. Robert W. Rawe 110.25; 2. Eddie J. Schwarz 109.58; 3.Robert R. Fraza 108.65.

CLASS C: *Open*—1. Anthony J. Grish 133.58; 2. Babe Dunning 131.62; 3. Jas. McElroy 126.27. *Sr.*—1. Maurice Stanglin 127.61; 2. Richard Rigney 123.24; 3. Jas. D. Whitlach 122.82. *Jr.*—1. Eddie Schwarz 121.08; 2. Kenneth Kimmel 114.60; 3. Roger K. Welden 113.23.

CLASS D: *Open*—1. Keith H. Storey 144.87; 2. Robt. H. Thomas 143.71; 3. Speed Ambler 137.77. *Sr.*—1. Richard Malinski 126.89; 2. Jas. D. Whitlatch 126.09; 3. John Hammel 125.82. *Jr.*—1. Kenneth Kimmel 131.05; 2. Eddie J. Schwarz 127.97; 3. Leonard Boesken 124.95.

CONTROLINE FLYING SCALE: *Open*—1. George Earl 118; 2. Chesley C. Common 116; 3. Richard I. Maguire 110. *Sr.*—1. Robert O. Rada 124; 2. William Boyd 110; 3. Don E. Yearout 92. *Jr.*—1. Ronald Thorenson 98; 2. Jack Hudspeth 96; 3. Jack L. Butler 43.

CONTROLINE (JET): *Open*—1. Bob M. Thor & H. Lundquist 141.34; 2. Geo. W. Sweet 130.19; 3. Arthur Aegerter 128.80. *Sr.*—1. Don Block 137.98; 2. Thos. Baker 132.98; 3. Don M. Sektnan 126.80. *Jr.*—1. Edward Sweet 122.90.

CONTROLINE—STUNT: *Open*—1. Louis Andrews 116.0; 2. Jas. G. Saftig 106.5; 3. Carl Malmsden 99.0. *Sr.*—1. Jack W. Gilroy 96.5; 2. Russell Snyder 86.5; 3. Albert Grimm 85.5. *Jr.*—1. Clifford Scaible 114.0; 2. Lawrence Goodall 85.5; 3. Robt. A. McClary 73.0.

WAKEFIELD'S FLASH

THE Wakefield Competition, flown in Akron last August 27, resulted in a win for the English team when Roy Chesterton took first with a 6:27.3 average for 3 flights. Other winners are listed below. There were full 6-man teams on hand from England, Canada and U.S.A., while four flyers from Belgium competed. In addition, American proxy-fliers operated planes sent from New Zealand, Australia and Belgium.

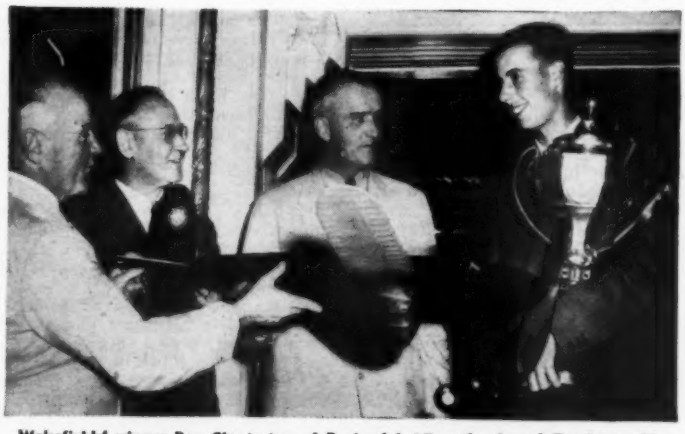
The Meet was sponsored by the Cleveland and Akron Women's Chapter of NAA with the active cooperation of U.S. Naval Air Station at Akron. The Belgian flyers travelled to Akron from Detroit where they had participated in the Plymouth International Meet. The English flyers were met in New York City by Frank Zaic of the AMA Wakefield Committee and were flown to Akron in a U.S. Navy plane.

The win by Chesterton means that the Wakefield Competition will be held in England next year, where teams from Holland, France, Italy and many other countries are expected to participate.

The top ten fliers were: 1—Chesterton, Eng. 6:27.3; 2—Marsh, N.Z. 5:52.5 (proxy-flown by Curth); 3—Holland, U.S.A. 4:29.7; 4—Coryell, U.S.A. 4:16.0; 5—Milligan, Can. 3:45.8; 6—Copland, Eng. 3:16.5; 7—Cahill, U.S.A. 3:10.9; 8—Lippens, Belg. 3:1.7; 9—Van Hemelrijck, Belg. 2:45.9; 10—Bunton, U.S.A. 2:44.0.

For complete details of the 1948 Wakefield contest, the winning models and probable future trends, watch for our article on the Wakefields in—

December
MODEL AIRPLANE NEWS.



Wakefields' winner Roy Chesterton of England holding the famed Trophy as his plane is examined by (l. to r.) B. E. Fulton, Akron Municipal Airport Mgr.; Maj. E. Hobbs, British Consul at Cleveland; Maj. Al Williams, famous U.S. racing flier

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NIGHT FLIGHT FOR U-CONTROL

by LEONARD V. MARES

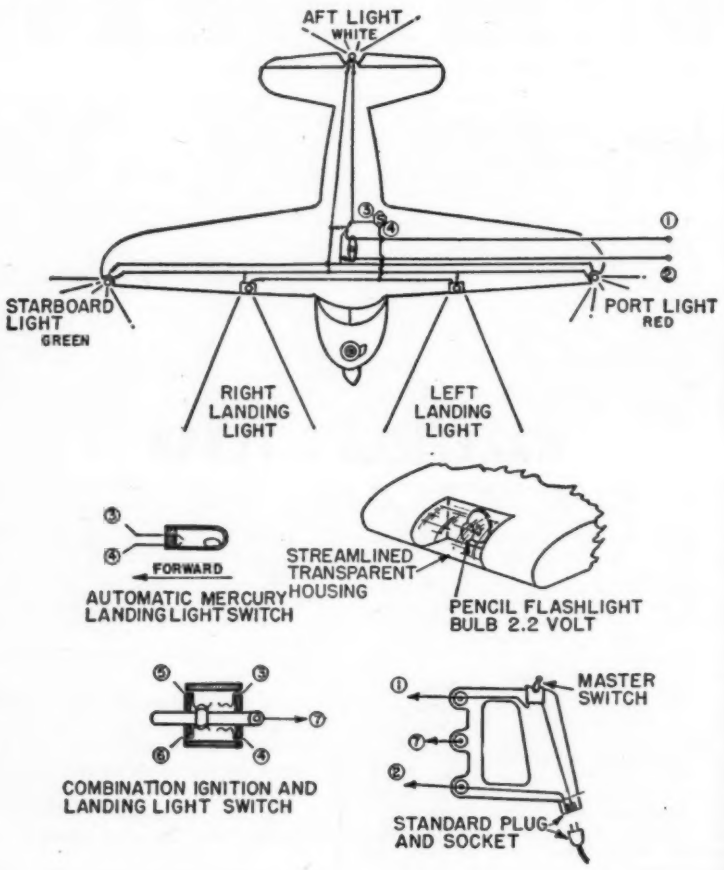
I BELIEVE that my most impressive flight in an airplane was during my first night solo, and there is no reason why most of this thrill cannot be had while night-flying a U control model—the faint flaming exhaust and colored navigation lights skimming through the dark sky, then finally the landing with the groping landing lights feeling toward the ground. Even watching a transport landing at night at your home airport is a thrill indeed.

The accompanying sketches will give you several ideas on how to equip your model with lights. The source of power for illumination can be attached to your belt and should be 3V using the same type of cells as in your booster battery. These may be plugged into your control handle which incorporates a master switch to control your lights. Your controline wires will transmit the current to the model in flight. The lights should be turned off while the model is at rest since the bare control lines may short your battery.

Miniature bulbs rated 3V, about 5/32" in dia., were available before the war and were used extensively during the war for special aircraft instrument illumination. These are now being sold for civilian use. The landing lights are pencil light bulbs rated 2.2V. These have a lens built into the glass bulb and throw an excellent landing light beam about 10 feet when fed 3 volts.

Also illustrated are two types of switches for landing lights. Both can easily be made from scraps in your workshop. The first is the automatic mercury type. When the model is under power the mercury is held toward the rear; however, as soon as the engine dies and the model is brought into a glide the mercury comes forward and makes contact. The other type of switch is a combination ignition cutout and landing light switch to be used for a 3-line system. If you are careful in making and using this switch it can be a 3-position type; first, ignition on, lights out; second, both on; third, ignition off, lights on. However, using the switch this way you must be careful that the polarity of the ship's battery does not oppose that of the external light battery. There are small radio switches of this type available on the market; 4 pole, 3 position.

Of course you may want to add interior lights, and on military models you can have formation and position lights. Some bombers when fully illuminated look like a Christmas tree. There is one thing to remember; according to CAA rules you can start logging night pilot time one hour after official sunset—so go to it, night flyers, but be extra careful about obstructions.



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6th — Open Stunt Event	"	"	"

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The Swish

(Continued from page 27)

the development of full thrust, although in the dozen test flights made thus far this aspect had not been too closely observed. One thing that does pose a threat to the model is the fuse which flares up when first ignited. After a near fire on the first flight, the length of fuse sticking out of the unit was restricted to less than the recommended 1/4" and the cowl was cut back a little from the fuse station. The fuse occasionally throws fine sparks and it might be a good idea to protect the tissue wing covering back of the fuse on this particular design; a piece of bond paper would be sufficient.

The design problem is an interesting one. The most important consideration is weight, which should be held down to a maximum of 3 oz. including motor, for the small powerplant, and 5-1/2 oz. for the big unit. This weight, incidentally, corresponds to that of the structure (no motor) of a well designed rubber model. The model will fly at a greater weight but presumably performance suffers. After much head scratching one comes up with the impression that a *Jetex*-powered free flighter is essentially a towline type of model. The aspect ratio of course will be much less, and other proportions may differ somewhat, but you end up with a ship that is apt to fly like a towliner and to need nose ballast.

In the case of the *Swish*, a straight wing doubtless would have been located far back toward the tail to get gliding trim. The fuselage forward represents practically no weight useful in balancing or getting the c.g. where it should be. It was decided to employ a sweptback wing at no incidence and to limit it to the position on the plans for the sake of appearance. To trim, solder or clay must be added to the nose.

A study was made of various configurations suggested by the *Jetex* booklet and the *Swish* is based on one of their force diagrams. It was felt that the high thrust line position would be approximately at the center of resistance of the ship, minimizing any climbing or diving tendencies under power, and any difference between power-on and power-off trim. The c.g. threatened to be high, but with no torque to contend with it was believed that the ship would exhibit no real vices.

Construction is orthodox throughout, the fuselage being a box, and the wing a two-spar affair. The front spar runs through the center of the ribs—ala Hank Cole's wings—an arrangement we found both lighter and stronger than a wing with the same sized spars on either top or bottom surface. It is cleaner aerodynamically and resists warping to a great degree. Probably the greatest lesson learned from this ship was that construction must be absolutely true with all flying surfaces squarely in alignment, both when viewed from above or from the front. Brother, when you see a free flight model under power without torque you appreciate the effects of every little twist.

Walt Schroder joined us for the test flying. The ship was trimmed for glide and even given mild tow launches by putting the towline around the hooked end of the landing skid. Then came the big moment. What was going to happen? Did the thing go off with a bang? Would the ship burn up? What would it do under power? How fast would it go? Knowing so little about such a revolutionary development gives one a bad time on the first power launch!

A lighted cigarette was put to the fuse which immediately went to town. Now, the *Jetex* booklet tell you to hang on until you are sure the unit is "jetting," but until you have "teethed" on a few flights you don't realize how long this takes. At any rate Walt launched the ship, which, lacking full power, settled in front of him. Picking it up quickly he gave it one of those Brooklyn discus heaves. Maybe he figured it should go up like a rocket, but three quick launches were followed by three quick stalls and power dives. All the while the doting designer (yours truly) was screaming at him to hang on and try a gentle rubber-type launch. In the confusion the neighbor's sheep stampeded, baaing and bleating across the field.

By the time the second and third flights had been put in we had the hang of the thing. After the fuse is ignited and burns quickly into the cylinder with a pronounced hiss, all action seems to die down for a moment. A very gentle hissing follows, increasing slowly in volume for a second or two, followed quickly by a real fast build-up in thrust. You feel this thrust build-up as you continue holding the model and then gently launch it almost letting it fly from the hand like a rubber model.

Now we were getting gentle stalls, with the ship falling off into spirals. Since the model was trimmed to glide well, this meant the problem of thrust adjustments had to be solved. The clamp that holds the unit in place is held onto this model by two screws (all parts being part of the powerplant kit). By loosening the screws, shims of paper match covers could be placed under either end of the clamp to vary the thrust. Adding shims under the rear would increase the downthrust in the usual sense. Elongated holes in the clip permits sliding the clamp sideways for offset thrust when the screws are loosened.

The theory is that on pushers you use what would normally be down thrust to get up thrust and vice versa. After a flight consisting of a series of wicked stalls, conventional adjustments were resorted to. Thrust adjustments are fairly positive and the addition of one paper shim makes quite a difference in the power flight. The position of the *Jetex* unit on the plan has been changed to suit the adjustments worked out on the experimental model.

Once adjusted for good flights the *Swish* is quite impressive. If it should turn sharply, it wheels much like a glider. It is suggested that the glide be adjusted for straight ahead flight or with very slight turn. A turn in the glide tends to build up under power. Should the model spiral under power it probably will not continue all the way down to the ground, but even if it strikes the ground no damage results, provided the surface is grass, weeds, etc. The turn imparted to the model at the moment of launching seems to govern the direction and degree of bank in the power flight. After a really good power flight the model glides exceptionally well, and on one occasion during an evening's flying indulged in an impressive bit of ridge soaring. This glide after power should be in a wide

moderate circle; if power turns are too sharp, make final adjustments with offset thrust.

Based on the experience of twelve flights—all that the fuel charges in the motor kit would permit! (extra charges can be purchased)—it would seem that a smaller model than the 30" *Swish* should exhibit fairly spectacular power performance. The powerplant might be mounted under the fuselage and well forward toward the nose. This would lessen the amount of ballast and, if the nose were long enough, might eliminate ballast completely. Use of a lifting type tail should also eliminate ballast and offer some compensation for the low mounting of the thrust line. Downthrust should permit adequate power trimming.

But make no mistake, the *Swish* will put up good flights. It is capable of a minimum of 75 feet altitude under power without soaring (which it does very well) and a duration of at least 1-1/2 min.

How to Break a Speed Record

(*Continued from page 19*)

A word about pylons. Make certain the pylon is securely held in position by a large metal disc. The disc should be large enough to walk on, if it is not set in concrete. If the city fathers are solicitous about the grass, lay an old rug on the ground and cut a hole in it for the pylon to project through. The rug also will protect the feet from small rocks should you remove your shoes.

CONTROL LINE STRETCH—Control lines should be precisely measured. The lines stretch at high speed under the imposition of the centrifugal loads caused by circular flight. Also, there is the temperature differential to consider. Control lines are made of steel wire which has a coefficient of linear expansion of approximately .000012 inch per degree change in temperature. If the lines are measured at 60° temperature, and then flown on a warm day at 85°, the lines will be appreciably lengthened, and a slight increase in the radius of the flight circle will be produced. The resultant increase in circumference of the circle will cause the model to fly farther and thus lower the rate of speed per lap, which is the criterion for mph measurement.

Control line air resistance is very high and comprises in excess of 50% of the total flying drag. However, it has been found by experiment that a change of .001" to a smaller diameter control line caused sufficient elongation to slow the speed of the model in flight when calculated for a normal 70 ft. line length. Thus the reduction in drag was offset by the increase in diameter of the flight circle.

SELECTION OF PLANES—The best advice that can be submitted to the aspiring tyro for speed flying is first to purchase a reputable racing type engine, then make it perform at optimum performance and power output. Similar make engines are comparable in power output; the difference between one engine or another of the same manufacture, when all factors are considered to be comparable, is practically negligible. Also, buy yourself a stop watch, a starter and a humidity gauge. These articles make it possible to obtain optimum performance. Prepare yourself adequately for every contest. Study the position where the pylon will be placed in relation to the surrounding background.

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AIR HUMIDITY—Absolute air humidity is a vital factor to consider in obtaining optimum engine performance. The water vapor content of air not only affects fuel mixture but it also affects power output of the engine and the thrust horsepower developed. A humidity indicator of the conventional wet or dry type is suitable. A mechanical indicator is also useful. This instrument should be used to assist in the proper setting of the needle valve in relation to a specific humidity condition.

AIR DENSITY—Air density affects the performance of any engine to a surprising degree. Where density is low, and humidity and temperature are high, a subsequent reduction in the volumetric efficiency of the engine can be anticipated and will result in a reduction of the output power. Low air density also affects the propeller performance.

RACING FUELS—Expert speed fliers have found from experience that the most popular fuel formulas consistently seem to produce the best results. If you have no data on your fuel performance, check the performance against the prevailing weather conditions. As a beginner, watch the experts, and when they fly you too may fly with confidence.

ENGINE RUN-UP—Hold the engine to one side during the engine run-up so that the exhaust gas clears your clothing and hands. Fuel stains are hard to remove from your trousers, are injurious to the skin, and are messy. Experience indicates that 20 seconds run-up on the ground will heat the engine as much as 30 seconds run-up in flight. Ground warm-up is the best because of the possible variations in the fuel mixture after warm-up in flight.

TAKEOFF—You can't fly very well in race competition unless you have an able mechanical assistant. You must select one in whom you have the utmost confidence because you must work with him as a teammate. Above all, do not exude criticism for any handling or other minor fault which in your opinion could have been averted. Practice speed flying with your assistant so that you know his personality and traits as well as your own reactions. In this way you may succeed where others will fail. Resort to tact during competition, if in your opinion handling could be improved.

Set the dolly so that the takeoff is downwind. This allows the plane to climb easily to the cruising flight level. And remember, if your model will not rise properly from the dolly it isn't worth flying in competition.

WHIPPING — Don't get overexcited about whipping the model to gain speed. Whipping cannot be used under AMA Rules. The recent records set by Messrs.

CLEVELAND Brings More Good News to Modelers!

AGAIN this month, Cleveland introduces more NEW Models—the kind that everybody says "look just like big planes when they're in flight." Sky-high quality, at down-to-earth prices. Get yours now—build them—then fly them rubber, CO-2, gas, both free flight and line control (some designs, however, need slight "beefing up" when gas power is employed).

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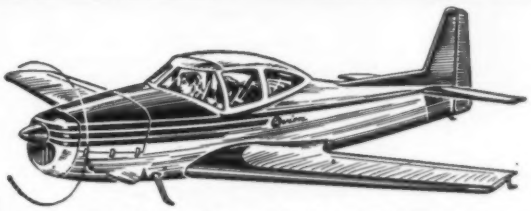

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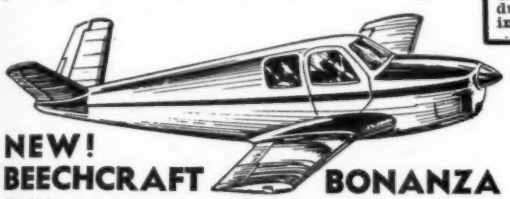

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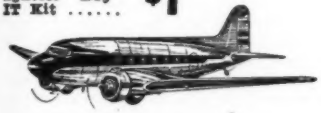

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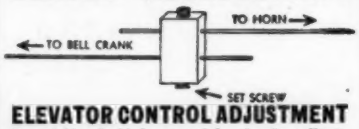

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Mathews, Huth and Anderson were all achieved without whipping action. These men flew their planes from 20 to 40 laps without whipping, being on the pylon at the start of the first lap. On lightweight models, whipping is of no specific advantage whatsoever. However, with a heavy model whipping can present some advantage during the initial laps.

YOUR FLIGHT PATTERN — You should experiment with your model until you can develop your own flight pattern. For example—if you fly your model consistently in the high performance condition at 105 mph, and suddenly on one flight you note that it is clocked at 110 mph, try to recall anything unusual that you may have done to cause an increase in speed. Check your lines, the fuel, the takeoff, needle valve setting, humidity, air density, air temperature, etc. and ascertain what may have caused the sudden increase in your air speed—assuming the timing has been correct and not erroneous. Only in this searching manner can you gain the experience to break records.

LEVEL FLIGHT OPERATION — Another major factor to consider in obtaining optimum performance is to build a model which will tend to seek a level flight attitude in still air or during windy conditions. This requires a model which is directionally stable about all three axes and is not subject to phugoid oscillations.

CONTROL HANDLE POSITION—The control handle position is important because you should keep the handle down so that you can view the top of the model. This makes it possible to detect any adverse tracking of the right or left wingtip. Don't fly with one wing high and the other low, it loses speed.

CONTROL LINE POSITION — The proper position for the control lines may be checked by suspending the model before flight from the control lines. The line guides must be attached in such a manner that the model will hang perfectly plumb when it is freely suspended.

TRACK YOUR PROPELLER BLADES —Before each flight, check the tracking of the propeller blade or blades. If the tracking is out of the vertical plane, a loss in thrust may result; or the model may be directionally unstable about the vertical axis because of an improper thrust line adjustment. As a result of improper propeller tracking, a loss in speed again will result.

PAINTING THE MODEL—Paint the model any color you desire which can easily be followed by your eyes. But paint the elevator a bright dazzling easily discernible color in contrast to the rest of the plane. This makes it easier to check position of the elevator visually during flight. Another good factor is to notice the shadow distance of the model from the ground in order to check the height if the background is confused and not sharply defined, or not in the open.

Proper painting of the model will help you from becoming dizzy. However, do not remove your gaze from the model nor allow yourself to be distracted or confused by the surrounding area or the spectators.

SPEED RECORD ATTEMPTS — You can't obtain high speed by forcing any model regardless of your power. Fly the model level with one hand, and if it won't stay there do not attempt to force it. The model is probably imperfectly adjusted. Fly it level at all times; banked flight attitudes tend to lower the speed because of the increase in wing loading.

HERE IS HOW TO LAND—Now that you have your model flying around at high speed, it is about time you considered what to do to land it safely. Basically the problem is not how fast one may fly but how slow one may land and still remain under control. Slick fields or wet grass make good runways for high speed landings. Try to detect the stall instantly because you must hold the control handle high, tighten the control lines, and back away from the pylon, all simultaneously. A landing runway of sandy soil or tall grass makes it necessary to tow the model until the stall is inevitable. If the model sways, let the handle fall loosely and drop it. Watch the control lines to prevent snags. When the model finally stops skidding along the ground, reel the control lines and secure them. Don't forget to put on your shoes and leave the circle course. Yes, that is all there is to it!

Pizonia

(Continued from page 21)

was built up of sheet balsa and small blocks. However, you will probably find it easier to carve the cowling out of a single block of soft balsa. Regardless, do a good job of it. Cut a 3/8" diameter cooling hole just above the crankshaft hole, a 3/8" opening at the air intake, and a small exhaust outlet on either side.

Sand the entire fuselage thoroughly and cover with gas model Silkspan. Use the paper wet for best results. Work a smooth fillet between stabilizer rest and sub-rudder. Cover the entire nose and cowling with Silkspan. Apply 5 coats of plasticised clear dope (Plasticised dope is made by adding two drops of castor oil to each ounce of regular dope —this triples the life of the paper and minimizes warps due to paper tension).

WING—The wing is built in the conventional manner. Select hard balsa for the spars, medium for the leading edge, and soft for the trailing edge, ribs, tips, and sheet covering. Use hard balsa for the dihedral butt-plates. Assemble the wing with 1" dihedral at the first dihedral break and 4" dihedral at the tips. Apply the leading edge planking and all gussets before sanding. Cover the bottom of the center section with 1/32" sheet. Sand the wing thoroughly and cover with light weight Silkspan. Brush on 5 coats of plasticised clear dope. Allow the wing to stand on its leading edge while the dope is drying—this eliminates warping tendencies.

TAIL SURFACES—The stabilizer is built in the same manner as the wing, but has 1" *negative* dihedral. Cover the bottom of the center section with soft 1/32" sheet, as well as the top of the entire leading edge. Cover with light weight Silkspan and apply 5 coats of plasticised clear dope. Block up between coats to prevent warps.

The rudders are cut out of 1/8" soft sheet balsa, sanded to a streamlined crossection and cemented vertically to stabilizer tips. If the ship is to be flown from concrete runways, music wire skids should be cemented to the rudder tips. Cover and dope the rudders.

The original ship was trimmed as shown in the pictures with blue dope. When you have completed the trimming desired, brush a light coat of Testor's

Hot-Fuel Proofer over the entire nose.

PROPELLER—Best results to date have been obtained by using *X-Cell* 8-8 and *Rite-Pitch* 8-10 props, both counterbalanced one-bladers. Make your one-blader as follows; Cut off one blade 3/4" from the shaft hole and drill a 3/32" hole straight in toward the hub. Soak the hub in hot water for several minutes, then insert a 1" wood screw of approximatelv 1/8" diameter. Allow 3/8" to protrude. Now wrap this portion with copper wire until the weighted end is slightly lighter than the opposing blade. Sweat-solder the wire thoroughly. Add solder until the weighted end is slightly heavier than the opposing blade, then trim to balance perfectly. Now you have an efficient one-blader that will not throw weights at you.

ADJUSTING AND FLYING—All surfaces should be warp-free with the exception of the wingtips. Both tips should be slightly washed out (trailing edge at R4 is 1/8" higher than R1 at dihedral break). Correct any warps by brushing on a coat of thinner and bending the surfaces gently by hand.

Install small tabs of celluloid on the rudders. Bend for a gentle left turn.

The engine has 2° *left* thrust and 2° down thrust. Use washers between engine and firewall to obtain desired thrust setting.

Install the prop in a horizontal position before glide-testing.

Pizonia should balance at the rear spar. Use modelling clay if any correction is required.

Make your first glide tests in tall grass. Toss the ship gently into the wind, and expect an extremely flat glide. If there is any sign of a stall, add 1/32" under leading edge of the stabilizer. If the glide is fast (over 15 mph), add 1/32" under trailing edge of the stabilizer. Continue glide tests and adjustments until a smooth glide with a gentle left turn is obtained.

Now for power tests: Set the timer for a 10 second engine run, and run the engine rich. The ship should climb in a fairly tight circle to the right. On succeeding flights, continue to lean the engine out until top power is being used. You will find that with increases in power the right-hand power circle becomes larger and the rate of climb approaches 1500 ft. per minute. Recovery after power cutoff will be very fast. Be well on your way downwind when you use a 15 second engine run.

The cowling described allows adequate cooling for nominal engine adjustment and anything up to approximately a one minute engine run. However, if you intend to run the engine extensively on the ground, remove the cowling. The best method of breaking in the engine, if it is new, is flight at approximately 1/2 power.

The gas filler cap should be removed so that the tank may be filled through a small hole in the cowling. Loss through the filler hold will be negligible.

The author would appreciate any correspondence concerning *Pizonia*. Please address him care of this magazine.

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Chris Craft Express	4.95
Chris Craft Runabout	4.95
Owens Flagship 26"	4.85
"Buckeye" Speedboat (A-B)	4.95

Misc. Boat Kits

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Sov. of the Seas 23"	3.50
Cutty Sark 24"	3.50
Tug Boat 14½"	3.50
Oil Tanker 20½"	4.00
Destroyer Preston 24"	4.00
Coast Guard Campbell	4.00
Constitution 22"	6.00
Marion Sprague 29"	8.50
USS Kearsarge 32"	8.50
Marine - Santa Maria	15.00
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Airways

(*Continued from page* 33)

After hearing from model groups all over the country, we find the pattern is the same everywhere. A modeling group acquires a plot of land, usually in a residential area because business-area land is scarce and expensive. They set up a controline circle and start to fly; soon the neighborhood is up in arms! The first complaint is about *noise*—and thereafter all sorts of other objections are raised, with the result that the modelers are soon legislated out of business, usually by a city council that knows nothing whatever about models but is ever so sensitive to a vociferous group of potential voters. The aftermath (it happened in Evanston, too) is that flying fields in other parts of the city are also shut down by the new "public nuisance ordinance", even though they might have been living in relative harmony with *their* particular neighbors.

As pointed out above, the first complaint is always *noise* (if the planes made no noise most of the neighbors wouldn't have noticed them in the first place), so it seems logical that club advisors, senior modelers, hobby shop owners, etc., should urge and even insist that no models be flown in the city limits without effective mufflers (to make your own, see M.A.N., June '48, or buy one—they're inexpensive!). Next step is to assemble a committee of responsible modelers representing every section of the locality, and visit the city fathers. Get the authorities on *your* side; then, if you are conducting your activities in a manner the authorities approve, you will have their strong support when some neighborhood crab starts a fuss. The basic point here is to inaugurate use of mufflers *first*—don't wait 'til complaints pour in, for it is often too late them. Remember, it's a lot easier to prevent a restrictive ordinance from being passed than it is to get one off the books.

We would like to hear from groups who are working in harmony with their city governments on model flying and who are willing to pass along their knowledge to fliers not so favorably located. Let us know what sort of flying ordinances you operate under; whether you have a joint modeler-local authority committee; do you require mufflers; and any other pertinent points. And *write us soon*, as things are reaching a critical stage in many communities.

* *

Cecil Torner (Lidinge 2, Stockholm Sweden) sends in Picture No. 1. This free flight rocketplane has a 35" span and a speed of 130-150 km/hour. We wish he had told us more about this little job.

No. 2 shows a P51 with *Forster* 29 engine, built by Maj. Jack Wheeler (Holyoke, Mass.) from a Berkeley stock kit. Took 2nd in New England State Championship and has won several other scale events.

Tip Smiley (1604-23 St., Des Moines, Iowa) submitted No. 3. All his models are his own original design. He can fly the ship Class A and B by merely changing the motor units which are held on by three bolts. The plane has a very fast climb and is as stable as one could desire.

Another free flight enthusiast, Jimmy Hyland (Kirkstall, Via Koroit, Victoria, Austr.) sent in No. 4. Details of the *Rambler* as built from plane in M.A.N.: telescopic shock absorbers as fitted to the prototype, powered with a 1/4 hp *Whirlwind* motor, finished in silver with red lettering. The *Rambler* has not been

(*Turn to page* 50)

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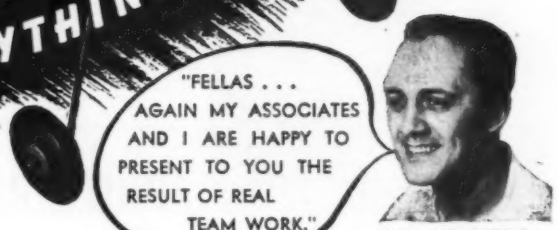

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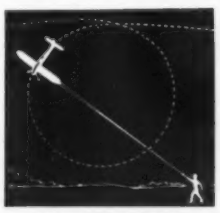
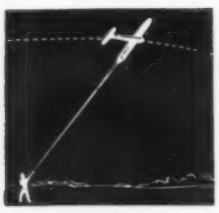
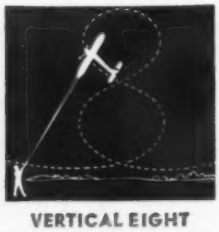
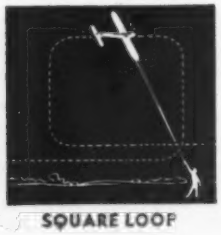

OUTSIDE LOOP


INVERTED FLIGHT

HORIZONTAL EIGHT


VERTICAL EIGHT

OVERHEAD EIGHT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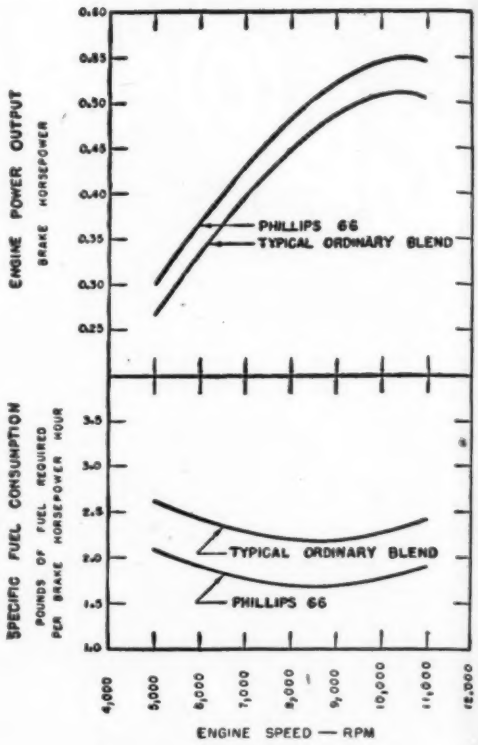


PHILLIPS 66 MODEL MOTOR BLEND

flown because Jimmy burned out the coil for the motor.

J. H. Maxwell (871 Filton Ave., Filton, Bristol, England) submitted No. 5, built from the description and drawings by Fred Youngren (April '48 M.A.N.). For use with the *O.K.* he modified the stand slightly by adding a little bracket which holds the CO2 bulb exactly on the hinge line. He also altered the calibrations so that maximum reading on the scale is 0.05 ft. lbs. instead of 0.5 as on the original. With the prop shown (8" in dia., 4" pitch) and the engine adjusted to run for about 42 secs., at 65° F. the maximum torque and revs. are 0.015 ft. lbs. and 4,650 rpm respectively. He used a stroboscope to indicate the revs. These figures give a maximum hp of approximately 1/75. He found that this maximum is maintained for the first 5 secs. of the run, after which it drops off rapidly.

Robert S. Nevin (3827 Ferndale Ave., Baltimore 7, Md.) should be very proud of his Martin MB1 in No. 6, now finished after 2100 working hours. Wingspan is 36" and the construction is as true to scale as he believes possible. The cockpit it fully decked out, and the model is covered with silk and 10 coats of dope. The motors are installed, the same as on the full scale airplane, and all cowling is removable. Motors are complete with all ignition wires, and tubing for water cooling is also according to the original.

Cadet Morton Ray (Class of 1950, Co. E-2, U.S. Military Academy, West Point, N.Y.) sent in No. 7 of the *Cleveland Playboy Sr.* "It is powered with a *Sky Chief* which has given performance that could not have been beaten by a more expensive engine." The floats are more or less experimental and were added long after the model had proven itself on wheels. The auxiliary fin under the stabilizer is for added stability with floats and is detachable with the rear float.

Bob Haines (324 E. 3 St., Moorestown, N.J.) entered No. 8 of his own design "Manta" type stunt model. He used the "Manta" wing because it offers a large area and a sleek appearance. Powered with a *Drone* turning an 11-10 prop, the ship proves to be an excellent stunter. A *Maeco* tank was used, which never failed to function while flying inverted. Wingspan is 49", weight 38 oz. The thick wing section is symmetrical, allowing the flier to perform any inverted maneuver, such as outside loops.

Hubert A. Entrop (1249 S. 100 St., Seattle 88, Wash.) submitted No. 9 and it seems as though he was really looking for a *big* plane. This job has a wingspan of 16', a center chord of 2', and an area of 4,032 sq. in. It weighs 95 oz. The wing and tail are covered with Jap tissue, with a double covering in the center 8' of the wing, and also the center of the tail. This covering may seem a little flimsy but actually it came out quite strong when he added a little castor oil to the dope. It is powered with an *Orwick 64.* There are two definite drawbacks; weather has to be practically dead calm when the model is flown — and transporting it (even though the wing is in four sections and the body in two) to the field is more than a bit difficult.

No. 10 shows a model *Hot Rock* made from M.A.N. plans by Paul Blegen (907 4th St. S., Moorhead, Minn.). It is powered with a *Drone* Diesel and painted yellow with black trim. *Hot Rock* travels at about 60 mph and is very stable and easy to control.

Edgar Hayden (1718—137 Ave., San Leandro, Calif.) sent in No. 11 of the *Boeing L15A,* built by Johnny McDonald (AD1, USN, USNAS, Alameda, Calif.). It is U-controlled but hasn't been flown yet. Powered by an *Ohlsson* 23, the model has 42" wingspan.

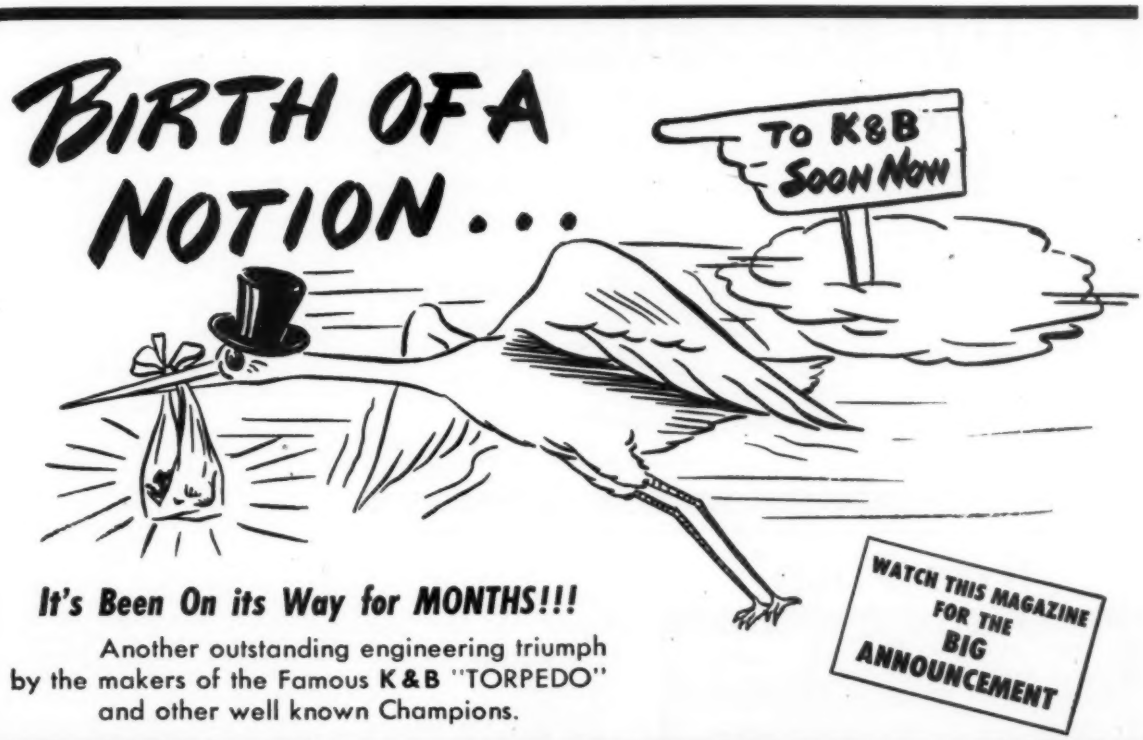
Our last picture was submitted by Wesley John (523 1st St., Palisades Park, N.J.). The three modelers in No. 12 are (left to right) Wesley John, holding *Wanderer;* Fred Danew, holding *Stratometer;* and Billy Kucker, holding another *Stratometer.* Each one is a stick model. The *Wanderer,* which appeared in M.A.N., has given flights up to 2½ minutes. The picture was taken at the "Bergen Evening Record" Contest held at Teterboro, N.J.

NEWS OF MODELERS

This month our column is classified in three categories: (1) Motors—devoted to those interested solely in exchanging powerplants. (2) Pen-pal seekers—modelers who want to correspond or swap magazines, kits, plans, etc. (3) Special requests.

EXCHANGE MOTORS:—H. Bohling, 9 Thornbury Court, Church Road, Isleworth, Middlesex, England . . . John W. Jones, 172 Church Lane, Smethwick, Staffordshire, England . . . D. Gadd, 22 Middleham Road, Edmonton, N. 18, London, England.

PEN-PAL SEEKERS:—Boone Henri, 17 Daltonstr., Hilversum, Holland . . . Frithjof Kjelstrup, 14 years old, Furubraatvei 19, Nordstrand, Oslo, Norway . . . John O'Doherty, 16 years, 7 Trinity St., Dublin, Ireland . . . Bernard P. Olney, 145 Woodgrove Rd., Burnley, Lanes, Eng-



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land . . . T. Redman, 24 years, Hillside School, The Drive, Godalming, Surrey, England . . . Dennis C. Boyd, 15 years, Paraparaumu Beach, Paraparaumu, N. Zealand . . . A. M. L. Kennaugh, 38 Clarendon Sq., Leamington, Warwickshire, England . . . John R. Stainer, Salisbury House, St. Thomas' Hill, Canterbury, Kent, England . . . R. Harvey, 834 Boundary Rd., Palmerston North, North Island, New Zealand . . . Arnold P. Nowell, 30 Williams Av., Hyde Park, Mass. . . . A. Lamb, Sec. of *Stirling Model Flying Club*, 2 Sutherland Ave., Stirling, Scotland . . . B. J. Matthews, Sec. of *South Bristol M. A. C.*, 46 Foxcote Rd., Bedminster, Bristol 3, England . . . James Valentine, 16 years, 545 E. James St., Ely, Minn. . . . Stanley C. Jones, 109 Bulwer Rd., Leytonstone, E. 11, London, England.

SPECIAL REQUESTS:—D. W. Evans, Sec. of *Weston Controliners*, One Oxford St., Weston-super-Mare, Somerset, England, will send anyone a copy of an English model publication upon request.

Dick Loehning, 344 2d St., Menasha, Wisc., would like to correspond with some foreign Boy Scouts about his age, 16.

2378415 AC 1 Houghton, Accounts Section, RAF Dyce, Aberdeen, Scotland, has three complete volumes of "The Aeroplane Spotter" from 1944-46 inclusive and would like to exchange these for copies of same dated after the October '46 number.

CLUB NEWS

California

Results of the *Fresno Gas Model Airplane Club's* monthly Free Flight Meet held July 25: *Class A*—Suiki Mataga 4:31; *Class B*—Fred Ginder 15:00; *Class C*—Jack Tiftick 9:08; *Class D*—Shuji Maruko 12:27; *Juniors*—Fred Ginder 15:00.

Also, here are the results of the Tulare Quarterly Free Flight contest held August 8 by *Tulare Sky Kings Model Club*. *Class A*—John Davidson 11:12; *Class B*—Bill Rieken 11:00.5; *Class C*—Amos Kleinsasser 7:28; *Class D*—Jack Crose 7:56.

Illinois

The first model airplane meet of the season was held Aug. 22 at Chanute Air Force Base, 38 planes were entered and the event was considered a real success. Results: *Stunt*—Albert Brown; *Flying Scale*—Richard H. Duane. *Speed Class B*—Gene Bretzius; *C*—Albert Brown. *Testors Award*—Lee Robinson. *Worst Crackup*—Gene Bretzius. The meet was under the supervision of Lt. Harry G. Vogler Jr. of 3718th AFBU (MTU); timers and judges were Capt. Ben Smotherman, Lt. A. C. Cavallom and Lt. Paul A. McGill, same unit.

Winners at Levy Bros., New Jersey, Contest; l to r, Doris Libl who won trophy for most active woman contestant; Marty Libl with his Beauty Event winner; Ray Taylor who flew the ship because Marty was too nervous—thanks to Jim Hunt for this shot

Maine

Howard K. Lambert of *Lewiston Sky Devils* sent in results of the Lewiston-Auburn Airport meet held July 11: SR. EVENTS: *Class A Speed*—Stanley Davis 53.0; *B Speed*—Robert Williams 55.6; *D Speed*—Howard Lambert 97.75. *Stunts*—Richard Smith 26 points. JR. EVENTS: *Class B Speed*—Arthur Marshall 62.0; *C Speed*—Mathias Marquardt 65.75; *D Speed*—Mathias Marquardt 69.3. *Stunts*—Richard Everett. OPEN EVENTS: *Class B Speed*—Eugene Pelletier 53.5; *C Speed*—Howard Smith 98.5; *D Speed*—Ernest Pelletier 100.0. Open Scale Event (all classes combined)—Howard Smith 131 points. All interested persons in and around Lewiston and Auburn are asked to contact either Ernest Pelletier, 133 Ash St., Lewiston, or Howard K. Lambert, 125 Pine St., Lewiston. The *Sky Devils* meet on Wednesday nights and during the summer flew on meeting nights at the old Central Ave. Airport in Lewiston.

Maryland

Sec. Gerald L. Howard of the *Aircats* writes that this is a new club and the majority of members are soldiers at Aberdeen Proving Ground. The authorities have granted admission to fly on the post's softball diamond. Chief interest is controline, mainly because of the lack of sufficient space for free flight. The club

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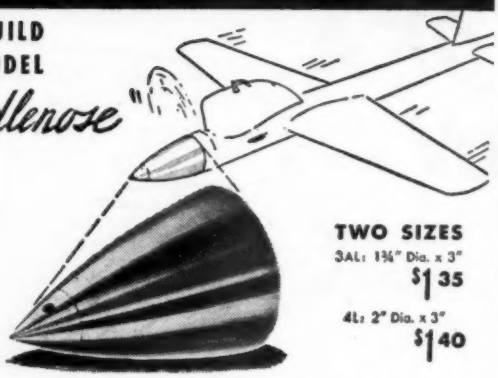

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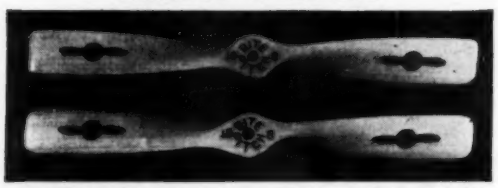

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has been divided into two divisions—Senior and Junior—called respectively "Aircats" and "Air-kittens". A kitten must pass a flying test to advance to "cat" status. Quite original!

New York

The *Long Island Rev Masters* are interested in obtaining new members to build up its size so it may be recognized in its community. Their main trouble is in reaching new prospects. Club flying is held every Sunday afternoon at the North Bablyon School field. Meetings are held on 1st and 3d Sundays after flying at the *Rev Masters'* club house on Belmont Rd. For information inquire at the Babylon Recreation Shop.

The second annual *Flying Dutchman-Union Sun & Journal* model airplane contest was held at Lockport, N.Y., August 8. Contestants came from western N.Y., Penna., and Ontario, Canada. About 3000 spectators enjoyed the meet which featured some high class stunt flying. George Pollock was contest director. Here are the results: *Class A Open*—Robert McCarthy 91.5; *B*—Ronald Kasmala 122.5; *C*—Robert McCarthy 126; *D*—Joseph Campione 138.5. *Stunt*—Douglas Joyce 340 points; *Class A Jr. U-control Speed*—Clyde Clabundy 94.5; *B*—Roger Nafus 117.5; *C*—James Shepard 100; *D*—George Maurer 130.5. *Jr. Stunt*—Paul C. Paris 297 points. James Shepard, Sec. of *Lockport Flying Dutchman* model airplane club, sent us these results.

Ohio

Winners of the *Cleveland Press'* 10th Annual Junior National Air Races: CONTROLINE EVENTS. *Sportsmen's Race, all ages*—C. W. McCracken. *Class B Speed, Jr. & Sr.*—Don Weisensee 101.40; *Open*—Harold De Bolt 120.8. *C Speed, Jr. & Sr.*—Alfred Stegens 120; *Open*—Stanley Siemenski 123.28. *Class D Speed, Jr. & Sr.*—Bob Gardner 126.26; *Open*—Harold De Bolt 127.65. *Stunt Flying, all ages*—Clifford Durbin. *Jet Speed, all ages*—Harold Heston 136.36. FREE FLIGHT EVENTS. *Class A, Jr.*—Lyman Slack Jr. 2:7.3. *Sr.*—Don Kubina; *Open*—Norbert Nowicki 6:41.4. *Class B, Jr.*—John Humphreys 4:14.9; *Sr.*—Don Kubina 7:39.6; *Open*—Don Gutgluck 9:13.5. *Class C-D, Jr. & Sr.*—Jack Guyberson 10:30.6; *Open*—Marvin E. Blemmly 12:49.5. *Rubber-Powered, Jr.*—Jim Schmidt 3:52.3; *Sr.*—Donald Tesin 13:51.3; *Open*—Joe Elgin 12:52.8. *Towline Glider, Jr*—Sylvia Lanzo 2:6.8; *Sr.*—Joe Williams 8:57.1. *H-L Glider, Jr.*—John Humphreys 22.8; *Sr.*—Donald Ogden 1:7.1; *CO2 Duration Event, all ages*—Richard Korda 4:37.9.

Oregon

Results of the *Salem Cloudchasers* U-control contest held August 1: *Stunt*—Jackie Hudspeth. *Class A Speed*—Earl Cayton; *B Speed*—Lenard Sherman; *C Speed*—Jack Hudspeth; *D Speed*—Bill Compary.

Tennessee

John Dooley sent in the results of the 3rd Annual Model Airplane Contest for Tennessee and Georgia flyers. *Class A Gas, Jr. & Sr.*—Raymond & W. S. Funk; *B Gas, Jr. & Sr.*—Charles Hickman; *D Gas, Jr. & Sr.*—Raymond & W. S. Funk. *Rubber-Powered Cabin, Jr. & Sr.*—Dick Culver. *Rubber-Powered Stick, Jr. & Sr.*—Emmett Adkins. *Towline Cabin Glider, Jr. & Sr.*—Emmett Adkins. *H-L Glider, Jr. Only*—Owen Eldridge Jr. *CO2-Powered, Jr. Only*—Dick Culver. *Class A Gas, Open*—Elmo Dooley; *B Gas, Open*—Joe Culver; *C Gas, Open*—George Shack-

lett; *D Gas, Open*—George Shacklett. *Rubber-Powered Cabin, Open* — John Tudor. *Rubber-Powered Stick, Open*—Betty Culver. *Towline Glider, Open*—Elmo Dooley. *H-L Glider, Sr. & Open*—Walter Taylor. *CO2-Powered, Sr. & Open*—Walter Taylor. *Sportsmanship Awards*—Elmo Dooley, for giving up his claim on the Ace Traveler Trophy willingly and without dispute. *Best finished model*—Elmo Dooley. *Free Flight Stunt*—Walter Taylor.

Canada

On August 2 at Crumlin Airport the *London Modelaires* held their third annual contest, which was R. C. F. C. A. sanctioned and featured U-control speed, stunt, and realistic events. All speed flights were made from pylons and all ships were pull tested before each flight; as a precautionary measure the contest director ruled out *U-Reely* handles in the speed events. All events were in open class and flown on the tarmac in front of the R. C. A. F. hangars. Prize winners were: *Class A Speed*—B. McCarthy 90; *B Speed*—B. McCarthy 117.64; *C Speed*—B. McCarthy 128.57; *D Speed*—A. MacTavish 128.57. *Stunt*—A. Steels, 230 points. *Realistic*—R. Bolitsky, Boeing XF6B-1. Highlight of the meet was the performance of 4 year old Harvey Shoemaker who flew one of his dad's stunt ships and flew it well! Sec. R. L. Ireland was good enough to send along these results.

At the Bront Norfolk Aero Club—formerly an Air Force Base—the 2nd Annual *Kloudsters* Gas Model Airplane Contest was held August 14-15. Results: *Free Flight Class A*—B. Hockin; *Class B*—D. Douglas; *Class C & D (combined)*—B. Hockin. *U-control Class A Speed*—B. McCarthy 96.75; *Class B*—B. McCarthy 108.50; *Class C & D (combined)*—J. Shaw 119. *U-control Stunt*—B. Lellemen 114½ points; *Realistic (Scale)* 100 points max. —H. Zenn 89½ points (Navion).

Canal Zone

The *Canal Zone Model Airplane Club* is proud of its membership which has grown to 16 since March when the club was organized. Election of officers are held every six months. The club meets every two weeks at the American Legion Hall in Balboa, C.Z., on Thursday at 7 p.m. Members of the club fly their models every Sunday at the Balboa Stadium from 9 a.m. to 1 p.m.

England

W. S. Warne, Esq., president of Barnes and District Model Aero Society, reports an interesting experiment was tried out by his group. "Harrods, the big stores people, kindly loaned their Sports Ground at Lonsdale Road, Barnes, for a charity show. One of the big attractions was a control line flying demonstration by a circus of 'cracks' (the strides in twelve months of c/1 flying have been enormous). In this way the majority of the spectators had a 'first time' view of quite advanced flying on their doorstep. The outstanding performer was Fred Guest, who gave the people their first sight and sound of a *Dynajet*—the evening's biggest thrill—and a polished exhibition of aerobatics with a *Cyclone* engined ship."

New Zealand

Barry H. Gleeson, Hon. Sec., wants it known that the *Kiwi Aeromodellers Club* has acquired a new name—*Rotorua Model Aeronautical Association*. Like most other clubs they are seeking new members; if interested, contact Mr. Gleeson, P. O. Box 323, Rotorua, N. Z.

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Ohlsson 23, Glow	9.95	McCoy 49	25.00
Ohlsson 19 Glow	9.95	McCoy 60	27.50

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Monogram Piper Cub	4.95	Glo-Bug	2.95

FREE FLIGHT KITS

Playboy Jr.	3.25	Westerner B	4.50
Playboy Sr.	6.00	Powerhouse B	4.95
Zipper	5.95	Westerner C	5.95
Sailplane	8.95	Stinson Reliant	17.50

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Spark plugs, state size	50c		
Austin Timer	1.50	Veco Air Wheels, per pair 2½" 2.15, 3½" 2.50 4½"	2.75
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Mounting Bolts	4/10c	Flotorque Props, 8"-14"	35c
Flexible Needle Valve	1.25	Hiball Props, 8"-14"	35c
Neoprene Tubing, ft.	25c	Super Scru Props, 8, 9, 10 Dia., 8, 10, 12 pitch	60c
Airflo Wedge Tank.	1.00	Plywood Sheets, 1/16, 3/32, ⅛, 3/16, ¼, 6"x 12"	35c
Walker U Reely	7.50	Ball Bearing, Sm. or Lg.	10c
Walker Remoto	12.50	Alum. Tubing, ⅛" O. D., 1/16 O. D., 3/32 O. D. Ft.	15c
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1/16x1/4	2c	1/4x3/4	8c
1/16x3/8	2½c	5/16 sq.	5c
1/16x1/2	3c	3/8 sq.	6c
3/32 sq. 3 for	4c	3/8x1/2	8c
3/32x3/16	2c	1/2 sq.	9c
3/32x1/4	2½c	3/4 sq.	15c
3/32x3/8	3c		
3/32x1/2	3½c		
1/8 sq. 3 for	5c		
1/8x1/4	2½c		
1/8x3/8	3½c		
1/8x1/2	4c		
5/32 sq.	1½c		
3/16 sq.	2c		
3/16x1/4	3c		
3/16x3/8	4c		
3/16x1/2	5c		

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1/4x2	16c
5/16x2	18c
3/8x2	20c
1/2x2	22c
1/32x3	10c
1/16x3	12c
3/32x3	15c
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1/4x3	25c
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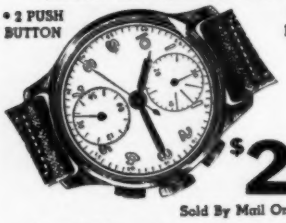

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The 17th Nationals

(*Continued from page* 16)

that despite the new rules there were plenty of O. O. S. flights—also plenty of screaming dives into the ground. No one knows what will cure these two bugaboos of free flight, unless it be to make dethermalizers mandatory and triple the present power loadings. What a howl that would raise!

The CO2 event, a new one this year, was very popular; quite a few original designs were seen, the most novel being a large flying wing operated by Henry Cole. This model appeared to have almost twice the span of the more conventional CO2 jobs, but flew very smoothly and had a nice climb. As far as we could tell, the CO2 event was practically "one class," since none of the smaller CO2 motors were seen. It is probable that this condition will change, however, since the CO2 record at this writing is held by the smallest motor in the field. If it proves practical to fly all CO2 motor sizes together, this event should prove very popular in the future, since the rules are so simple.

Another point of interest noted in the CO2 event was the wide variation in flying technique. Some flyers ran their motors gas-model style; that is, wide open to get a short run but sky-rocket climb. Others, however, adopted the newer technique of running the motor only fast enough to get a smooth slow climb for a relatively long period. Which technique is best only time can tell, but the slow-motor style has one big advantage; we didn't see a single model flown this way go into that characteristic and fatal downward power spiral!

Another new event this year was the PAA-Load contest, open only to Class B ships which are required to carry two 8 oz. weights in a specified manner. As this event was added at the last minute and really calls for a ship designed for the purpose (you are not allowed to slap a pound of weight on any old pylon job), there were not as many entries as there should have been. Nevertheless, a lot of interest was created and it was felt that Pan-American Airways has started something good with this pay-load event. Even with the weight handicap and the special design requirements, the final times were not so bad compared to those made in the regular Free Flight Class B Junior and Senior categories (the PAA-Load event is limited to Jr. and Sr. only).

Indoor flying was held in the Kansas City Municipal Auditorium, an ideal spot for this activity. With lights sunken in the very high ceiling and almost no obstructon in the whole area, conditions were close to perfect. The only obstruction was a large loud speaker at one end of the hall. A few models got stuck in this speaker, but believe it or not the Kansas City Fire Dept. drove a hook and ladder truck right out on the floor, ran up a ladder, and the models were easily plucked from their resting place.

During the day we heard a call over the P. A. system from indoor flying director Jim McLelland that is indeed rare at large meets. Jim begged the contestants to step up and make their official flights, since he had *lots of extra timers* waiting to go to work!

This year, at long last, those interested in radio control saw a real contest. There were 14 entrants who actually made official flights. Activity was so intense that R. C. Director "June" Pierce agreed to allow the entrants to fly until dark. Winner Jim Walker had a brand new ship in the competition—so new in fact that he was working on it while being driven in a trailer to the meet.

The winners of the R. C. event really put on a beautiful show, and the results were so good that many modelers who had never tried R. C. flying vowed they would be in the event at the next Nats; prominent among these converts were two famed West Coast speed merchants who really had a gleam in their eyes as they watched the R. C. jobs go through their paces.

Several representatives of the Kansas City office of the FCC were on hand to help the boys stay on frequency. Modelers who had R. C. ships but no amateur license were especially grateful for the presence of the government men; the latter all had amateur licenses and offered their services as official operators, while the unlicensed modelers did the actual flying.

There are so many people who helped organize and run the meet that it is impossible to mention them all. We feel the system followed this year of having a special director for each branch of flying was very successful. Also, the card and punch system used to record flight times was a good one, and certainly there could be no claim that a card had been tampered with. The fact that very few protests were lodged showed that this system works well, and also demonstrated what was apparent to most all contestants and observers, namely, that this was one of the best run of all Nationals!

We hope Frank Nekimken and his American Legion sponsors can do as well again next year. They will surely be able to if they receive the measure of cooperation from the people adjacent to the 1949 contest site that they had this year from the citizens of Olathe and the personnel of the Olathe Naval Air Station.

OFFICIAL 1948 NATIONALS WINNERS

NATIONAL CHAMPION
Robert L. Holland, Sunland, Calif.

CLUB CHAMPION
Oakland Cloud Dusters

SENIOR NATIONAL CHAMPION
Jack Norris, Lakewood, Ohio

NOVICE NATIONAL CHAMPION
Charles Sotich, Chicago, Ill.

JUNIOR NATIONAL CHAMPION
William Fox, Boulder, Colo.

PAA-LOAD EVENT
(Class B Free Flight Gas—best single flight JR. or SR.) 1. Herbert Kothe 361.0; 2. Fred Whiting 233.4; 3. David Thomas 144.5

WAKEFIELD ELIMINATIONS
Junior—1. Jack Butler 16.36; *Senior*—1. Tom Coryell 336.47; 2. Charles Dorsett 16.36; 3. David Thomas 168.66. *Open*—1. R. Schumacher 274.33; 2. Dick Korda 273.47; 3. James Bunton 272.67.

INDOOR H.L. GLIDER
Junior—1. Charles Sotich 44.0; 2. Ronald Truelson 40.0; 3. Jack Butler 33.0. *Senior*—1. Angelo La Castro 54.8; 2. Dennis Rushing 54.3; 3. Don Kennedy 53.1. *Open*—1. Michael Demos 1:03.0; 2. Raymond Good 1:02.0; 3. Manuel Andrade 1:00.7.

INDOOR STICK

Junior—1. Charles Sotich 8:56.8; 2. Jack Butler 4:01.0; 3. Chris Ross 1:00.5. *Senior*—1. Don Kennedy 22.23.0; 2. Erwin Rodemsky 17:36.0; 3. Carl Redlin 15:10.6. *Open*—1. Bill Atwood 25:00.1; 2. Robert Holland 24:32.0; 3. Henry Cole 23:42.0.

INDOOR CABIN

Junior—1. Jack Butler 0:15.0; 2. Charles Sotich 0:09.0; 3. Fred Andrews 0:05.0. *Senior*—1. George Xenakis 6:19.0; 2. Don Kennedy 2:38.8. *Open*—1. Walter Erbach 16:26.0; 2. Peter Demos 14:17.0; Bill Atwood 14:16.2.

MULVIHILL OUTDOOR STICK

Junior—1. Harry Snaveley 385.1; 2. Louis Roemer 214.6; 3. Charles Sotich 182.3. *Senior*—1. Peter Nishanian 908.0; 2. Wm. Erlich 808.8; 3. Robert Bates 695.0. *Open*—1. Bob Bienenstein 821.3; 2. Robert Holland 802.5; 3. J. D. Breedlove 730.3.

STOUT OUTDOOR CABIN

Junior—1. Ronald Truelson 264.6; 2. C. W. Edgar Jr. 193.2, 3. Harry Snavely 181.4. *Senior*—1. Wm. Erlich 747.8; 2. Richard Tarjany 592.6; 3. Carl Redlin 568.4. *Open*—1. Manuel Andrade 785.9; 2. Sid Jepson 678.2; 3. Joe Matulis Jr. 641.8.

TOW-LINE GLIDER

Junior—1. Ronald Truelson 147.3; 2. Jack Butler 108.9; 3. Charles Sotich 68.9. *Senior*—1. Bill Fox 610.3; 2. Richard Enseki 484.4; 3. Bill Crany 317.0. *Open*—1. Carl Lindsey 771.5; 2. David Kneeland 630.8; 3. F. J. Lilly 511.1.

FLYING SCALE (RUBBER POWERED)

1. Paul Gilliam 70.8; 2. Chester Lanzo 67.8; 3. Robert Holland 67.1.

CONTROL LINE NOVELTY STUNT
(One Age Class)

1. Davis Slagle 249.5; 2. Leon Shulman 212.; 3. Clifford W. Schaible 171.0.

CO2 EVENT

Junior—1. Larry Erickson 295.0; 2. Gene Smoyer 233.7; 3. Charles Sotich 224.6. *Senior*—1. Erwin Rodemsky 448.6; 2. Mike Stephens 296.5; 3. Robert C. Jones 295.9. *Open*—1. Merl Shammo 697.3; 2. Bob Bienenstein 644.2; 3. R. J. Dunham 599.3.

OUTDOOR H. L. GLIDER

Junior—1. Bob Gelvin 248.2; 2. Charles Sotich 152.0; 3. Jack Butler 101.4. *Senior*—1. Carl Haas 239.0; 2. Henry Savage 234.9; 3. Gene Templemeyer 215.4. *Open*—1. Dennis Davis 324.8; 2. Michael Demos 233.2; 3. Joseph Macay 229.8.

FREE FLIGHT GAS CLASS A

Junior—1. Bob Gelvin 491.7; 2. Thomas Moffit 431.3; 3. Maurice Pollock 358.0. *Senior*—1. Jack Norris 838.8; 2. Jason Haywood 762.0; 3. Dick Tarjany 737.7. *Open*—1. Merl Shammo 1134.9; 2. E. H. Aikman 773.0; 3. Fred Miller 771.4.

FREE FLIGHT GAS CLASS B

Junior—1. Larry Erickson 865.0; 2. Lawrence Goodell 395.5; 3. Richard Tremps 394.0. *Senior*—1. Jack Norris 727.9; 2. Bill Fox 719.0; 3. Norval Hale 681.3. *Open*—1. Richard H. Arland 848.4; 2. J. E. Vance 845.5; 3. Frank Vollrath 825.1.

FREE FLIGHT GAS CLASS C

Junior—1. Jack Butler 398.5; 2. Vernon Weber 320.2; 3. Jim Keller 211.6. *Senior*—1. Wm. Burgess 1000.3; 2. Larry Lohkamp 502.2; 3. Donn Dietrich 480.6. *Open*—1. Wm. H. Parmenter 775.0; 2. Harold Tremps 641.3; 3. Richard K. Enseki 603.7.

FREE FLIGHT GAS CLASS D

Junior—1. Vernon Weber 664.12; 2. Larry Erickson 600.0; 3. Steven Carter 358.3. *Senior*—1. Dave Reber 1184.2; 2. Andrew Bauer 750.8; 3. Fred Whiting 711.2. *Open*—1. Jerry Brofman 1112.9; 2. Don Butcher 741.2; 3. Wm. Parmenter 671.3.

R.O.W.—ONE CLASS

1. Bob Holland 489.8; 2. Lew Mahiew 403.6; 3. Andrew Tagliafico 284.9.

RADIO CONTROL

1. Jim Walker 193; 2. George G. Trammell 179; 3. F. R. Foxworthy 164.

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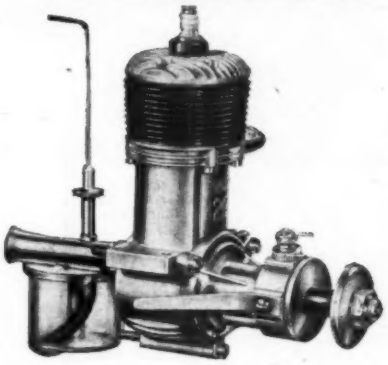

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Although AeroGloss dope can be applied over other dope as a fuel proofer, we strongly recommend for your protection our complete line of fuel-proof products.

Protect your model against the insidious seeping of hot fuels through such unprotected areas as the cockpit, cracks in the paint, or through the fuel-proofer itself. There is no fuel-proofer including AeroGloss that can prevent this seepage into the underlying materials. This seepage causes weakening of the glue joints that eventually ends in the failure of the parts involved. It destroys the stressed-skin factor that contributes to more than 50% of your model's strength. Be a safe and happy modeler, enroll into the class of champions. Use AeroGloss, THE DOPE OF CHAMPIONS.

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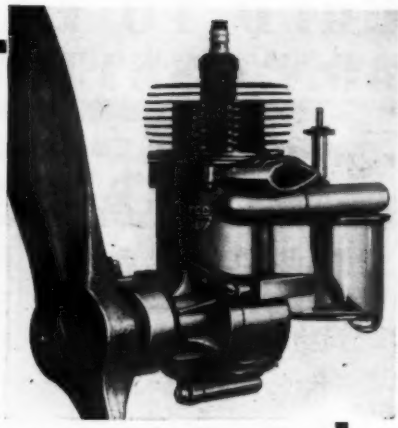

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B-Battery Protector

(*Continued from page* 34)

have an excellent buzzer with reliable contacts, as they are usually of silver.

If the buzzer is not loud enough, a clapper can be added to the armature to strike a small gong in the same manner as a door bell. The gong can also be used as a housing for the buzzer in the manner suggested by dotted lines in drawings 1 and 2. If the buzzer is mounted on the battery, be sure the gong doesn't touch your clothing or its sound will be muffled.

Here is a final suggestion relative to insulating the control lever and the wing guide from the control lever wires: It is best to fully insulate the lever and guide from both wires instead of from only one of them. Then there must be two insulation breakdowns before there can be a short circuit between the wires through the lever or guide.

Drawing 3 shows insulation inserts in the control lever wires, and 4 and 5 show two different styles of wing guides made of insulating material such as Bakelite or fibre. The insulation inserts of 3 may be formed of any plastic material—the back of a broken comb or the handle of a discarded tooth brush being quite suitable and easily carved and filed to shape. Each insert has two holes through it at right angles to each other and grooves on opposite sides leading to the holes. Each control lever wire is looped through the holes, bent together to lie in the grooves and then wrapped with shipping tag wire and soldered. The flexible lead to the relay is included in one of the soldered joints. This type of insert is rugged and will stand much more of a strain than it will ever be called upon to take.

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Drawing 4 shows an insulation guide riveted to a tin bracket which is cemented to a balsa wing and further held by screws. In 5 a tin bracket fitting around a notch of the guide is employed. The latter arrangement is suitable for a solid wood wing such as was used on the author's *Collapsible Trainer*, or for a wood insert cemented in a balsa or other type wing. The suggested combination of inserts and guide will provide a maximum of permanent trouble-free operation.

As to the operation of the buzzer, it will indicate the approximate position of a short circuit, buzzing loudest when it is close to the battery and least when it is at the plane. Intermediate pitches indicate the position of a short circuit between these two extremes along the flying wires.

To run down a short circuit from one flying wire to the other, manipulate them between your fingers, engaging them with each other progressively from the reel to the plane and note the point at which the buzzer gives a signal. If the enamel is badly scraped off a satisfactory repair job is difficult, although shellacking or varnishing the wires will sometimes help.

The buzzer is an inexpensive accessory to save many a battery that would otherwise run down due to short circuit trouble. A 300 ohm buzzer should draw about 150 MA (milliamperes) of current from a 45 volt battery. However, if your battery is one of the popular "hearing aid" types which weigh about 8½ oz. and measure about 1" x 2½" x 4" as illustrated in drawings 1 and 2, the drain will measure about 75 MA because this is a heavy drain for that size battery. We are speaking now of a short circuit that is located somewhere between the flying wire connections to the *Remoto* and the battery. When the short is close to the plane, the drain will be reduced in proportion to the resistance offered by the flying wires but will seldom be less than 35 MA which can run a hearing aid battery down at a relatively rapid rate. They will only last about 5 hours (intermittent use) on a 20 MA drain so you can imagine what a short circuit close to the battery will do to one if you don't have the 300 ohm buzzer to cut the discharge rate down and give you a warning so that you can clear a short circuit soon after it develops. The buzzer should be immediately unplugged and the short circuit remedied.

The best policy of course is to make up your entire control wire system mechanically correct so as to minimize the possibilities of mechanical failures resulting in electrical short circuits. Then when operating the system do so with care to avoid damage to the enamel on the flying wires, and avoid kinking the wire which cracks the enamel and weakens the wire so that it may break.

World War I

(*Continued from page* 28)

Upper and lower centersection panels both spanned 12' 7½" and their construction followed that of the outer panels.

D. H. 1A's nacelle was built around a basic structure of four longerons tied together with uprights, crosspieces and steel wire. Seats for the pilot and gunner were mounted at different levels, the pilot being higher to provide unrestricted forward vision. Both cockpits floored on the nacelle bottom. Nacelle nose was formed of sheet aluminum while the cockpit coamings were made of plywood. The vertical nacelle sides were covered with laced-on fabric except for plywood panels below the powerplant section. Engine bearers were attached to the nacelle frame in line with the upper longerons. Although it was often left off for convenience or to assist in cooling the engine, each D. H. 1A came equipped with a large aluminum engine shroud which was attached by small fasteners.

Boom structure of the D. H. 1A was well designed to resist loads produced by maneuvering and landing. Each of the four outriggers was made of hardwood, probably ash, turned to a diameter of approximately 1½ in. The forward ends of the booms attached to stamped steel fittings bolted to upper and lower extremities of the rear inner interplane struts. The outriggers were tied together in right- and left-hand pairs vertically by four streamlined spruce struts, two to a side. Upper and lower outriggers were joined by the horizontal stabilizer and a streamlined strut, respectively, the latter directly below the stabilizer leading edge. No other horizontal members were used except for two bracing wires in plane with the upper and lower outriggers.

D. H. 1A outriggers terminated in a vertical knife edge. There was no provision for a vertical stern-post as was the case with most structures of this nature. This function was taken over by the steel tube rudder spar which was fitted with a collar on each end, attached to the structure by strap hinges. The lower hinge was a sizeable fitting which extended downward to a fork through which a bolt was passed to form the tailskid pivot. A heavy steel coil spring, attached to the outrigger frame by steel wires absorbed tail landing shocks.

Stabilizer of the D. H. 1A was bolted to the upper outriggers, and was identical in shape and area to that of the prototype. This member was made in one piece and possessed a very thin symmetrical airfoil section. Frames for early D. H. 1A horizontal stabilizers were made of wood but in later models metal tubing was used throughout. The elevators spanned 2½" less than on the prototype and were likewise framed in metal tubing in later models. Except for differences already pointed out, the vertical tail surfaces were almost identical to the original product, and also were eventually made of metal.

Landing gear of the D. H. 1A was given a tread of 5 ft. 11 in. on tire centers against 5 ft. in the D. H. 1. The oil-and-spring type shock absorbers fitted to the D. H. 1 were discarded in the production model 1A in favor of the easier to build and to maintain rubber cord type.

Flight Characteristics

As in the prototype, the D. H. 1A was a pleasant airplane to fly. It needed little attention from the pilot and would fly a steady course hands off. This inherent stability, however, somewhat hindered it in maneuvering since its stable characteristics tended to resist deviations from straight and level flight. The ship took off quickly, climbed at a comfortable angle in which visibility was still excellent, glided well and was easy to land.

Historically, the D. H. 1A should always be remembered as an airplane that filled a need at a particular time—a heritage which its descendants have lived up to for more than 30 years.

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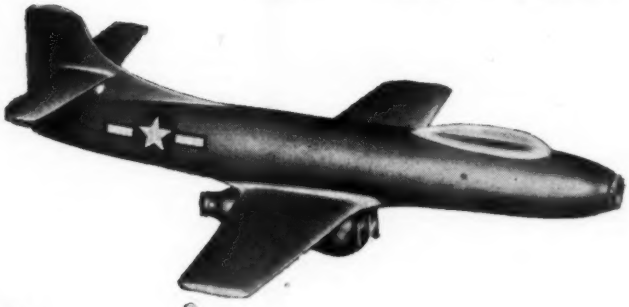

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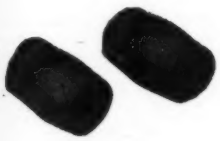

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Mooney M-18

(*Continued from page 25*)

the most highly publicized and debated instruments in the lightplane business.

The Mooney M-18 is the 18th Mooney design in a 20 year career in the aviation business. It all began back in May 1929 when Don A. Luscombe formed Mono-Aircraft Corp. in Moline, Ill. His chief engineer was Clayton Folkerts—who later designed a series of racing planes—and the company produced the Monocoupe (later to become a separate company and now located in Florida), Monocoach, Monoprep and Monosport airplanes. After a promising start, the depression forced Luscombe to sell the company to Knight K. Culver, who changed the name to Dart Mfg. Co. (after the name of a promising new design then on the drafting boards) and moved the firm to Columbus, O. Meanwhile, Don Luscombe started the new Luscombe Airplane Corp. in Trenton, N.J. and produced the famed Luscombe Phantom in 1934 and the first of the Silvaire series in 1937. (This company was later purchased by L. H. P. Klotz and moved to Dallas, Tex., where it is now producing the famed Luscombe two and four-place all metal aircraft.)

The Dart company struggled along until 1939 when it was dissolved and a new company, Culver Aircraft Corp., formed. By this time Albert W. Mooney had risen to the position of chief engineer and had designed the first Culver Dart lightplane. This basic design grew into the well known series of Air Force and Navy target airplanes, the PQ-8, PQ-14, TDC and TD2C models. Shortly after the first of these target aircraft got into production,

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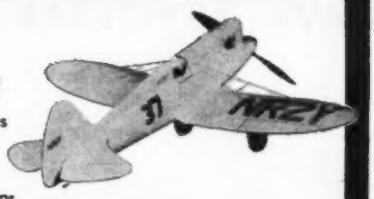

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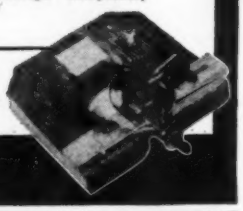

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Walter Beech, of the company bearing his name, bought the Culver company and moved it to Wichita, near the Beech factory. C. G. Yankey was named President, and Mooney continued as Chief Engineer.

Shortly after V-J Day the Culver V postwar model was announced and placed into production. This design incorporated most of the ideas Mooney had long felt were required for a safe, economical and simple-to-fly personal aircraft. However, partly due to high production costs, a recession in lightplane salesmarkets and a $3750 price tag on the airplane, it did not prove a commercial success and the Culver Aircraft Corp. was dissolved. Last year rumors grew that Mooney was flying around in a special little single-seater he had built for himself. The tiny plane attracted so much attention that Mooney formed a company to produce the design in quantity with the financial assistance of his old boss Yankey, now a Beech vice president. Yankee is President of Mooney Aircraft Inc., Mooney vice president and chief engineer.

The company has a small plant and its own landing field east of Wichita. The Mooney M-18 was recently awarded its Approved Type Certificate by the CAA and plans have already been made for production of 50 airplanes by the end of the year.

The M-18 is a small airplane, standing only shoulder high to the average height man. It has a span of 27 ft., length of 18 ft. and a height to top of rudder of 6 ft. 9 in. It weighs only 700 lb. fully loaded.

Extensive flight testing by chief test pilot Bill Taylor has proved the plane capable of 85 mph cruising speed and a top speed of slightly over 100 mph. It has an initial rate-of-climb of 450 ft. per min. and a service ceiling of 12,000 ft. Although its fuel tank holds only 8 gals. of gasoline, this is enough to give the plane a range of 400 miles, which is 50 miles per gallon! A graphic index to the capabilities of the M-18 is seen in a recent service test given the airplane by Bill Taylor. He flew the craft 1682 miles in less than 20 hours at an average cruising speed of 84.6 mph and a fuel consumption of 1.55 gals. per hour!

Report from the West

(*Continued from page* 13)

had but four entries. We understand that those entries were only completed the evening before the contest and had not been tested. Due to the release of the models by automatic stooge and by a single starter, several unforeseen accidents resulted and the event was not too great a success. Perhaps a clarification of rules and another presentation of that type contest will result in a more successful turnout. These rules included minimum wing area for given displacement; the models must resemble an actual aircraft or at least be equipped with fixed or retractable landing gear, open or enclosed cabin or cockpit, spinner unless actual aircraft had none, and the engine or engines completely cowled with the exception of the spark or glow plug.

The rules presented for this particular contest included engines up to .30 displ. only and a minimum wing area of 125 sq. in. We believe the turnout would have been much better if one more class had been included, allowing engines up to .65 displ. and a minimum wing area of 250 sq. in. Perhaps a better method of determining wing area in relation to displacement would be to set a minimum wing area of 4 sq. in. for every .01 cu. in. displ. This would give engines smaller than .30 and between .30 to .65 cu. in. a fair chance. Ships of 125 sq. in. or less might fly on 60 ft. lines, and those of 125 to 250

sq. in. on 70 ft. lines. By flying these models up to four in a circle, with a certain number of laps to fly, perhaps ten to fifteen mile runs, and making one landing to refuel during the race, not only would the spectator interest be regained but the modeler himself would have to be a good pilot with a good airplane to win his race.

Due to peculiarities of takeoff in every model, race horse starts are impractical and would involve accidents that would discourage future entries. Therefore the most logical type of takeoff would be one at a time, with a helper on each airplane releasing the model only when takeoff space is clear. With a timer or judge watching each model in the race, actual timing would start on each model as it is released by the helper; race horse starts would be unnecessary. Winners of the heat races would then fly for winning places in the main event.

These are only suggestions, and as everyone has his own ideas of the type of rules needed we only hope that this little discussion will help encourage others interested in developing something more interesting in the way of contests.

Others agree with us that the precision point system should be changed to give the modeler who has the courage to enter a scale or semi-scale model in this event enough points for his scale attempt, so that he would have a chance to win the event without doing all the maneuvers now required. A step toward this has already been started at some contests, by giving so many points for appearance or adherence to scale; eventually this may eliminate the "flying barn door" type of precision model.

These are not merely our personal ideas and complaints—the majority of modelers we have talked to are in agreement with us. How about it, fellows, what are your ideas and theories on these subjects?

Flash

(*Continued from page* 1)

schedule. Total quantity on order remains at 94 following cost-cuts to the original commitment for 100.

EXPERTS SAY THE "bomber to watch" is the Northrop B-49 eight jet Flying Wing design. After a long struggle to prove his unorthodox design, John K. Northrop now appears on the threshold of full vindication for his oft-disputed theories. AF awarded Northrop a contract for 30 B-49 bombers last June. Their present facilities at Hawthorne, Calif. can produce three bombers per month, which should complete the contract in about one year. AF indicated this was not fast enough, although industry oldtimers are well aware that this would be a phenomenally fast output for the 100 ton giants. As a result, Northrop subcontracted the production to Convair for the latter's huge Fort Worth, Tex. plant, only half of which is being used for the B-36. The obvious answer is that the AF wants not 30 of the huge bombers but possibly several hundred by 1952 when the 70 Group program is scheduled to reach full strength. Northrop will build two of the production B-49A models while Convair tools up for the remaining 28 airplanes.

ONE OF THE TRULY important accomplishments of the postwar AF has been its improvement in flight control techniques employed in the standard wartime Boeing B-29 *Superfortress* bomber. The 3500 mile maximum combat range of the wartime B-29 has been so greatly improved that a Strategic Air Command B-29 recently flew 5,792 miles nonstop and carried 10,000 lbs. of bombs over the first half of the trip! The plane was flown by Maj. F. Taylor, 509th Bombardment Group, from MacDill Field, Tampa, Fla. to California, where it dropped its bombs in the Pacific Ocean and returned to MacDill, landing with 317 gals. of fuel remaining in the tanks. The phenomenal increase in B-29 range has been made possible merely through use of proper throttle, supercharging and temperature controls coupled with the selection of altitudes and airspeeds as the flight progresses. The B-29 "Pacusan Dreamboat" has of course flown

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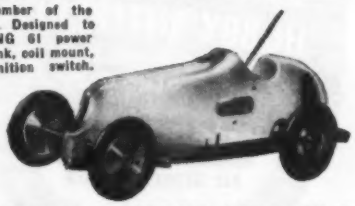

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THERE CAN BE NO question but what we owe our British friends a sincere paton-the-back for their aircraft gas turbine accomplishments. The Vickers Viscount recently flew successfully, powered by 4 Rolls Royce Dart turboprop engines, the first completely turboprop-powered commercial airplane in the world. Shortly after, the first turbojet-powered airliner in the world, a modified Vickers Viking, crossed the English Channel twice on a round trip between London and Paris. The plane averaged 394 mph and hit 415 mph over part of the journey. It is a standard Viking powered by two Rolls-Royce Nene turbojet engines. It may well be years before the U.S. accomplishes either turboprop or turbojet flight in a civil aircraft.

BUT THERE IS ONE powerplant that Uncle Sam seems to have a clear edge on: the compound engine. First flight installation of this unique design, which features a turbosupercharger geared back into the engine, will be on a Boeing XB-54, originally designated B-50C. The new plane will be powered by four Pratt & Whitney R-4360-VDT engines, the letters indicating "variable discharge turbine." Idea of the engine is to put to useful work the hot exhaust gases thrown overboard heretofore through the turbosupercharger waste gate. Previously the turbo has been used merely to compress air for the carburetor, but it will now serve to drive the engine itself. Engineers anticipate a 20% range increase in an aircraft equipped with the new fuel saving engine.

A DRASTIC, THOROUGH and unprecedented overhauling of the U.S. commercial airlines now seems certain in the near future following two years of steadily increasing losses in the face of steadily increasing business. In final desperation, all the airlines gathered in the CAA offices in Washington, D.C. for a full fledged examination of the situation. The financial mess has been created jointly by the CAB and the airlines with a heavy assist by increasing costs of living throughout the nation. But the heart of the matter lay in the question: "Can competition be regulated —and survive?" CAB has complete control of the airlines' routes, finances, business and flight methods together with authority to award them government payments on the basis of mail carried and money "needed" from time to time. The airlines thus feel that the CAB is at fault and that additional mail and "need" pay is all that is required. The CAB feels that the airlines should cut out meals aloft ($10-15,000,000 annually), excessive personnel and fancy operating methods. While the remedy for the present situation (a combination of the above) is clear, each of the airlines has demonstrated a different reaction. United Air Lines says it will continue free meals as part of its operation. American Airlines says it will not increase its fares. And so the battle goes, all of it examples of competition, all of it the result of government regulation and control through subsidies. But something will be done, shortly, and there are few even on the inside who have an accurate idea of the nature or extent of the overhauling now in store.

LATEST BRITISH jet fighter is the Hawker N.7/46 Naval carrier powered by a Rolls-Royce Nene turbojet engine. Although conventional in external appearance, the new Hawker fighter features jet exists on either side of the aft fuselage at the wing trailing edge. It is equipped with folding wings, deck arresting hook and other Naval features. A standard RAF landplane version without these features is now nearing completion. Speed is officially "well over 600 mph."

ARMY LIKES THE Navion four-place personal aircraft so well it has just bought 158 more of them from Ryan Aeronautical Corp., which took over Navion production from North American, original producers of the type. And when we say "Army" we mean just that: the Army Field Forces and National Guard have been and will continue to use them. One-third of the new order is for overseas delivery, half for Europe and half for Asia for the use of staff officers in their personal transportation between posts, bases and various units. A total of 83 Navions is already in similar service here in the U.S. The new models are L-17B's.

JUST TO LET YOU know that aviation in the U.S. is not nearly in as bad a shape as its publicity might indicate, here are some statistics recently issued by the CAA: the number of civil aircraft has increased from 83,000 to 96,330 in the past year; there are now 1023 scheduled transport aircraft in service; 6210 airports in use; 14,839 student pilots were licensed in one month together with 7929 new private pilots. Naturally, California leads the parade with 10,560 airplanes owned by its citizens. So things aren't so bad after all!

AND THAT Custer Channel Wing has flown again—without any wings. Willard R. Custer—Hagerstown, Md. inventor—has installed two of his channels on a conventional lightplane fuselage and made several flight tests. The new channels are powered by 90 hp engines, replacing the 65 hp used in the first successful channel-wing airplane two years ago. Custer claims vertical flight from his design.

CAL-AERO TECHNICAL INSTITUTE plans new building facilities at its field in Glendale, Calif. Long range program anticipates 30 new structures which owner, Major C. C. Mosley, says will be constructed and put into use as soon as building conditions permit. A regular enrollment of 2000 students will be accommodated under the new plans, with a peak emergency enrollment twice this figure. The school has trained over 14,000 mechanics and 26,000 pilots, mostly for the Services.

Fly a Mustang

(*Continued from page 29*)

1/32" sheet and cemented in place by means of the wire hinges. To make a neat job, it is recommended that the wire hinges be inserted through pin-holes in the rear spar.

When the assembled wing panels are dry, the root of each can be beveled to form the dihedral angle. Sand as shown in the sketch, making certain both wings are the same. Cement in place on each side of the fuselage, carefully checking to make certain each wing panel has the same dihedral and incidence. Allow to dry well.

While the wings are drying, the landing gear struts can be bent from .023 music wire. Here again, make certain you have a right and left hand gear. Cement in place very well on rib 2 with the axles pointing outward. Slip on a pair or 7/8" diam. hardwood or plastic wheels and bend the stub of the axle rearward. The strut covers are then cut from 1/32" sheet and cemented at the top to the rib and again at the bottom to the bent portion of the axle.

The propeller can be made in a number of ways—from two carved two-bladed rops, from two machine carved props, or from two paulowina props. However, the author prefers the method shown. The spinner is carved from a block 7/8" x 7/8" x 3/4" to the shape shown in the side view. If you have a lathe, or can use one belonging to a friend or school, by all means turn your spinner from pine. Drill four 3/32" holes and insert (with glue) four 7/8" long by 3/32" in diam. dowels from lollypop sticks. On these cement the prop blades at the angle shown. Stick a needle straight through the center of the spinner and balance the prop by sanding

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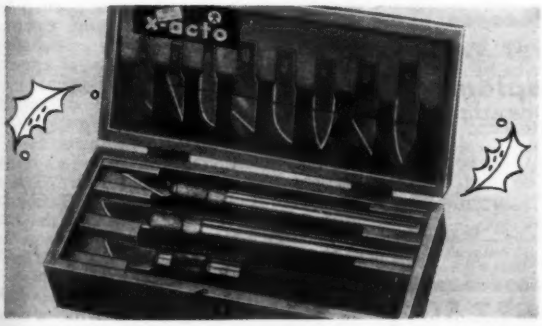

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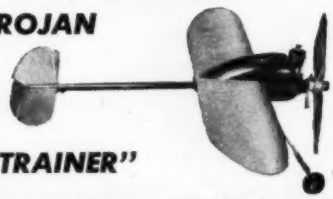

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the heavier blades. Notice that all blades have an airfoil section.

To finish the nose plug, pierce the center of it with a needle and cement a washer to both front and rear of the plug. Withdraw the needle and insert the prop shaft which is bent from .023 wire. Add a couple of washers, slip on the prop, and bend back the end of the wire and force it into the spiner. Cement it in place and the model is ready to fly.

But whoever heard of a balsa-covered P-51? No doubt you will feel as I did and get out the paint brushes and the dope. If you follow the method outlined below, no difficulty should arise.

First, sand the entire model lightly with #00 sandpaper. Give the entire model a thin coat of microfilm solution (if your dealer doesn't have this a suitable substitute can be made by adding to 1 1/2 oz. of clear dope, 1/2 oz. of alcohol into which has been dissolved 2 or 3 drops of castor oil). This is to prevent the wood from warping. Sand lightly, then add two thin coats of silver dope. Paint top of the cowl an olive drab and the tires and prop blades black. A final touch is a yellow tip on each blade. Add decals as shown.

The author's model flew well on a 6" loop of 3/16" x 1/30" rubber. But before flying, balance the model by adding clay to the nose. Then glide it and correct any diving or stalling tendency by bending the elevators up or down. All adjustments must be made carefully as 1/32" variation in settings makes a big difference in performance.

When the model is gliding straight and properly, try a short flight with 50 winds in the rubber. If all goes well, gradually increase the power. The author found that under full power it was necessary to lower the left aileron 1/16" to compensate for torque. Many interesting experiments can be made by raising or lowering the flaps and gliding and flying the model. Remember always to glide the model after making any changes in adjustments in the flaps or in the rudder before you attempt power flight.

Design Forum

(*Continued from page* 17)

course, but these may be found out through wind-tunnel tests and mathematical analysis. But by means of a model such as the one suggested here it is often possible to determine whether or not the new radical idea is practical.

On many occasions, flying men have been saved thousands of dollars by means of a working model, a working model *that did not work* and which proved the inventor's idea to be *unsound*. On the other hand, a practical flying model often reduces the number of hours of experiment required in the wind-tunnel. To say the least, it is extremely interesting to see how new ideas can be worked out.

* *

An interesting letter comes from Thomas U. Kirley, T/Sgt., 7th Weather Group, Ft. Richardson, Alaska. He objects to our matter-of-fact statement that the swept back wing is not as efficient as the conventional straight or *swept back leading edge wing*. He goes on to say:

"First of all, it is my belief that a high aspect ratio laminar airflow wing is more efficient than a low ratio wing. Thus, a swept back wing maintains a high aspect ratio with approximately 20% less span or wing frontal area than the conventional wing as shown here (Fig. 2)♦ thereby cutting down drag to some extent. Proof of

the pudding lies in the successful design of the *Ascender*, Curtis XP-55, which was flown at 507 mph back in the earlier days of World War II, and the newer designs exhibited in the Boeing XB-47 and North American XP-86. No data is available on the latter two, but I'll bet my bottom dollar that their speeds aren't to be compared with that of an ox-cart."

Let us get together Sgt. Kirley. Rather than being in the habit of knocking the swept back wing, we have usually been an advocate of such a wing. Strange to say, you could be absolutely accurate in saying that the swept back wing was more efficient than the straight wing and we also could be accurate in saying the reverse—provided we were talking about two different situations. From what you have to say, we judge this to be the case.

A wing is not most efficient under all conditions of flight. It might be efficient at one angle of attack and not at another, in which case it would be efficient for one use and inefficient for another. It is absolutely true that the straight wing shown on the left side of the airplane in Fig. 2 gives a higher *lift drag ratio* than the right wing of this airplane which is swept back. The lift drag ratio has always been the measure of efficiency from a purely *mathematical* standpoint. From the standpoint of *utility*—well that is another thing. This seems contradictory but it is true.

First of all, speed does not depend on the lift drag ratio as much as it does on a low value of the drag regardless of lift. In the design of the ordinary airplane, more wing area must be used than required for normal level high speed flying. The controlling factor is the landing speed or, in some cases, the takeoff run. In order to land at any particular speed a certain amount of wing area is required. The lower the required speed the greater the amount of wing area necessary. If an airplane lands at 60 mph and then flies at maximum speed in level flight at 200 mph, for instance, the major part of the wing would be absolutely useless and cause unwanted drag. At 200 mph the plane could fly with much less wing area. Consequently, a lot of useless wing is being dragged through the air, causing drag and reducing speed. In other words, it is a very inefficient arrangement. The most efficient wing for high speed would be one that could attain maximum possible speed in level flight. Such a wing would give lift equal to airplane weight at its most efficient angle of attack, that is, the angle at which the drag is minimum. Then, however, the maximum speed would also be the landing speed and there would be no reserve wing area and lift for climb.

When it is purely a matter of speed Sgt. Kirley is correct in assuming the swept back wing is most efficient, because when angled in this way *the drag* of any amount of wing area may be reduced. It is commonly understood that high aspect ratio wings, as in Fig. 3-A, are much more efficient than low aspect ratio wings shown in 3-B; and for the average airplane as we have known it this is true, but for high speed alone it is not. The trick is to reduce the drag. Sweeping back the wings, as shown on the right side of the airplane in Fig. 2, reduces the span and total drag at small attack angles, and helps to cut through the compressibility barrier at speeds above the speed of sound.

You will note that the straight wing on the left has 5 units of span, while the one of equal area on the right, Fig. 2, has only 4 units. The point is that the

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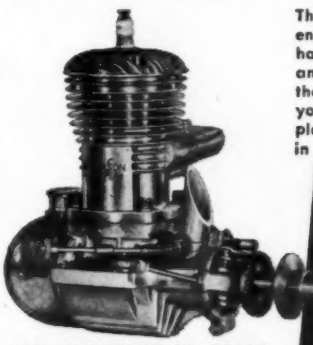

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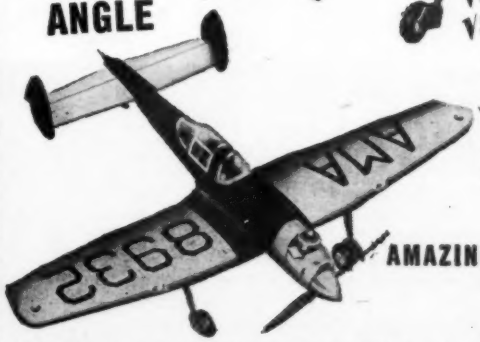

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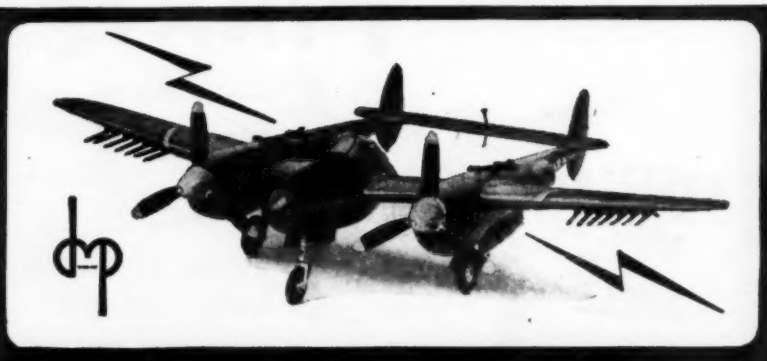

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drag of both wings is calculated for very low attack angles *when speed alone is desired.* The swept back wing in such cases gives less drag than the straight wing of equal area. At *higher attack angles* it gives *more drag,* but this is not an issue where speed alone is concerned. If climb is the issue then a straight wing is more efficient, because the *lift drag ratio* is greater in climb than the swept back wing. The swept back wing with swept back trailing edge (Fig. 2) is also less efficient for landing than a straight wing because at a 16° angle of attack, which is the common landing angle, this sweep back will cause a large tip drift; as the airflow strikes the airplane's leading edge it is turned outward due to higher pressure beneath the wing. This creates turbulence, increased drag and loss of lift.

Maximum lift is the important factor in landing, *not lift drag ratio.* The wing recommended by Sgt. Kirley will give no greater lift than the straight wing—in fact it will give less. However, by moving the trailing edge of this swept back wing rearward so it is perpendicular to the line of flight, without increasing the wing camber, the *area* and *lift* of the wing is increased materially while *drag* is increased only slightly if at all, because though the wing area is increased the *frontal* area is the same. The high speed of such a wing will be in the neighborhood of the high speed of the wing with swept back trailing edge, but the maximum lift at maximum angles of attack will be much more due to greater wing area and consequently the landing speed will be less.

We hope that some engineers do not confuse this. We do not mean that the maximum lift *coefficient* is more—we mean that the *total maximum lift* is more, because *the area* is greater. N.A.C.A. reports show that circular and very *low aspect* ratio wings lift well at *high angles of attack,* 30° in some cases, and in fact maximum lift at these high angles is much more than with high aspect ratio wings. Many readers may have seen pictures of the Chance-Vought *Flying Pancake* which provides a good example of this wing type.

Now we have our airplane designed for speed and for landing. Apparently the most efficient wing is the one shown in Fig. 4. Although this type wing gives high lift at fairly large angles of attack, it also gives high drag at large angles which makes it a poor climbing wing. This suggests that in order to have a plane climb steeply with this type wing it must climb at very low wing angles of attack—angles at which the *lift drag ratio* is high. Then climb is attained by a superabundance of power and the plane actually climbs as a helicopter responding to the propeller thrust and very little to lift on the wing. This is the principle used by the Chance-Vought *Pancake.* Its efficiency is increased also by turning the propellers in opposite directions, the blades moving outward at the top of the propeller arcs. This counteracts tip spill to a great extent and provides the effect of a much larger aspect ratio than is actually used.

We believe Sgt. Kirley is on the right track. Apparently he viewed the problem from another angle and spoke in his letter from the standpoint of speed alone, without considering climbing and landing requirements. It is not too much to predict that the future supersonic airplane will be one with:

(1) Swept back *leading* edges.

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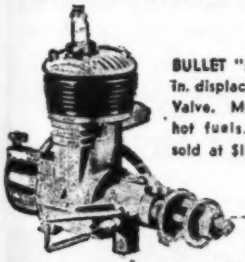

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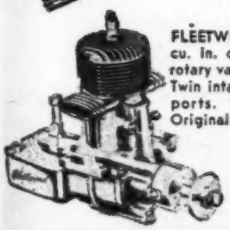

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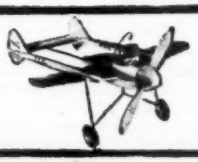

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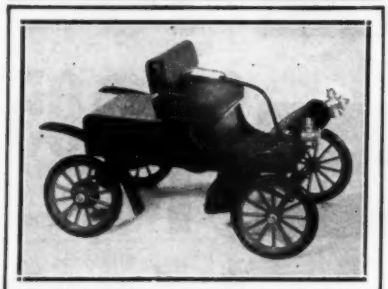

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In fact the future airplane will probably be very similar to the paper darts we used to throw around the schoolroom. A number of models have been built and flown with this wing plan form and their performance has been astounding. A comparatively small 20 oz. model powered with a .199 cu. in. engine recently flew 65 mph and was exceptionally stable. It is interesting to note that as maximum speeds of airplanes are pushed up the airplanes themselves become more like flying bullets than like birds. In fact, these high speed craft are technically not airplanes—their whole design depends on the laws of ballistics rather than the laws of bird flight. Theoretically, if the speed of an object through the air is great enough—for example an object like a high speed rocket—it will need no wings at all because the pressure on the body of the object itself produces lift.

* *

Send your questions and ideas to "Design Forum," MODEL AIRPLANE NEWS, 551—5th Ave., New York 17.

Answers to most of your problems in model design will be found in the book *"Model Airplane Design and Theory of Flight,"* published by Air Age Inc., 551 Fifth Ave., New York 17, N. Y. Send $3.75 for your copy.

Tadpole

(*Continued from page* 35)

Before starting we must caution those who have little experience with thin sheet balsa to use a slow-drying model cement, and one that dries with no tendency to bubble. Fast drying cement doesn't give you time to align the various parts properly; also, it tends to warp the thin wood.

The fuselage is started by cutting the two sides from sheet about 1/32" thick. Since most standard wood in this thickness is only 3" wide, glue an extra 1/2" wide strip (a butt-joint is satisfactory) where the cabin comes. It is advisable not to cut the windows yet, but the slit x-y can be made before assembly. Glue formers 1 and 2 to the sides and block the assembly up so it will be true when dry. Next add formers 3, 4 and 5 and join the sternmost ends of the fuselage together with the rudder between. Following this, cut and install the nose block, the hull step and the cabin rear edge.

The sponsons are built up on a solid center spar 1/16" x 3/8" and a solid trailing edge trimmed down from 1/8" stock, while 1/4" square forms the nose. Build the rough framework up, including the tips, then sand down to the finished shape and cover; use 1/16" stock on bottom and 1/32" on top, and when dry sand all edges smooth.

Our original plans called for addition of wheels to the model. The idea was to bind partially flattened lengths of aluminum tubing to the outer tips of the main sponson beam. Wheels on short music wire struts could then be added if we wished, and the water rudder would serve as a tail skid. In our rush to finish the model, however, we forgot to install the aluminum sockets so the wheels have never been tried. Subsequent flying experience indicates that the model would fly and R. O. G. nicely with wheels since it has ample power to take off from grass, sand, or even the living room rug!

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After completing the sponsons, cover the hull top and bottom. Forward of the step, we used 1/16" stock on the bottom, while to the rear, 1/32" wood was employed on both top and bottom. Note that the fuselage top behind the cabin is slightly rounded to help it shed water faster.

The flare on the fuselage bottom from nose back to step is made by allowing the bottom sheeting to extend 5/16" out beyond the fuselage sides. After trimming to shape, cement pieces of 1/32" sheet from the outer edges of the extended bottom sheet, upward at an angle to the fuselage.

Before the cowling over the fuselage nose can be installed the tank must be located. The tank is a relatively heavy unit and really should be placed much lower than shown. We chose the easy way out and installed it just under the cowl; after flying the model we had reason to regret our laziness. The model is definitely top heavy on the water, and while it will take off, fly and land nicely, a crosswind under one wingtip often causes the opposite tip to submerge. (Note: The plans show sponsons 1/2" longer and 1/8" thicker than on the prototype. This will increase lateral stability to a considerable extent.)

It would be preferable to put the tank in the suggested lower position, though this will entail some juggling to get the filler valve in a spot where it can be reached. One idea would be to lower the tank as much as possible, retaining it at the same angle as on the prototype; then cut a hole down through the noseblock for the filler. This procedure would lower the tank a full inch and should give a worthwhile increase in water stability. Wherever you mount the tank, be sure the end to which the feed pipe fastens is at least 3/8" higher than the front or filler valve end. If the rear is lower, or even if the tank is level, liquid CO_2 will travel through the feed pipe and stall the motor. With the tank mounted as specified only gaseous CO_2 reaches the motor, even in a climb.

With tank mounting disposed of, cowl over the nose, and cut window openings with a razor blade point; our window and windshield were made of .005" transparent acetate sheet.

The motor is pinned and glued to the nacelle, which in turn is glued atop the wing. Before these parts are fastened in place it is a good idea to finish up the rudder and elevator, then mount all parts—including motor and propeller—temporarily in place to check for overall balance. The plane should balance just at the step. It will probably be tail heavy, as was the prototype, but balance is easily achieved by gluing a small amount of lead in the extreme nose. It is well to add a little extra weight here as the ship will again be tail heavy after papering and doping.

While on the subject of dope, it should be said that straight dope must be avoided on a model of this sort because it has a tendency to harden the balsa and make it brittle. Rather, we suggest the use of glider polish, which is regular dope with softening agents—such as castor oil—added. This substance should be mixed with an equal volume of dope thinner. (Whenever we call for dope, hereafter, we refer to this 50-50 glider polish mixture.) The thinned glider polish has added advantages in that it takes a little longer to dry than straight dope, which is helpful when you are papering; also it has no tendency to warp the thin wood surfaces.

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We now come to the paper covering and waterproofing. You will find this job much easier to do before the wing is fastened in place. Briefly stated, the object of the papering is to cover *every single bit of wood*, be it on a flat surface, an acute angle, or an edge. You might as well start with the fuselage sides; trim the paper off flush with upper and lower fuselage edges. Now paper the top and bottom, lapping the pieces over the sides about 1/8". You will find it most convenient to cut the paper roughly to size, brush on a thin coat of dope, lay on the paper, then smooth it out by brushing on another coat of dope. All edges except those that are cut flush should be nicked with scissors about every quarter inch, and at even shorter intervals around sharp radius curves like the rudder and elevator tips.

If you have never done this sort of covering, practice first on an old model that has lots of curves; remember, it is up to you to put the paper on smoothly and without wrinkles—you can't tighten it with water or dope afterward!

Do not use colored dope—if you want colors, try to get colored tissue. The original model has red wings and elevator, while fuselage, rudder and sponsons were given two coats of clear dope in which was mixed some aluminum powder. Finally, two coats of clear dope were brushed on the entire model.

To top it all off, after the covering was thoroughly dry, we applied two coats of Simoniz car wax, well rubbed down. This adds almost no weight and really brings up the surface finish and waterproof qualities.

Details, applied before final doping and waxing of course, were put on with black paper. The decals on wings and fuselage should be placed before the final coat of dope or they will come off after the first few dunkings.

The propeller is cut from a blank of pine measuring 4-1/2" x 9/32" x 3/4" wide, cut to the so-called "toothpick" shape. Blank thickness is tapered to 9/64" at tips, starting halfway out on each blade. The prop on the original model was of yellow pine (the grain of this wood produces the laminated appearance) which made it rather heavy, but probably helped the motor turn over at the required high speed. If too light a prop is used, difficulty will be experienced in getting the motor turning in the direction you want.

Flying adjustments are made as usual; glide the model and correct stalls or dives by slight elevator adjustment. We found up or down thrust unnecessary, but used moderate side thrust to help offset torque. First flights should be made with moderate power. As the model is a bit large and heavy for the *Campus A-100* motor, you will not get a very fast climb. Then when you are ready to try R. O. G., increase motor speed by screwing the cylinder *inward* into the crankcase; rotate the cylinder about ⅛ turn at a time until you have sufficient power to take off. We found our motor had to be running at top speed for this purpose. When so adjusted and with the fullest possible fuel load put in the tank, hand launched flights averaged 40 sec. Best time ever made was 52 sec., with the motor slowed down a bit, all flying done over water.

It is admitted freely that this model is not as good as it could be hydrodynamically. Better action on the water and faster takeoff would be assured if there were another step in the hull. This could be 4" behind the present step, and need be only 1/8" deep; such a step would help break water suction on the long tail. We omitted this step in our desire to keep the design as simple as possible.

Before closing, a few words on care of the model might be of interest. The prototype has made dozens of flights from, and over, water. It has been upside-down many times, often for several minutes while a retriever was trying to reach it in hip-deep water. It has never shown the slightest tendency to soak up water, so we feel our waterproofing process was a success.

The motor was under water quite often, but by keeping it well oiled, corrosion has been prevented. After every flying session the model was wiped off while still wet, and the motor "blown" clean by directing at it a blast of CO2 from the cartridge holder (care was taken to turn the prop so the piston covered the exhaust parts when doing this). Then a bit of oil was put through the ports with piston both up and down, and the prop turned over several dozen times to distribute this oil. Flying over water was never attempted without the tank filler valve plugged with a piece of balsa soaked in oil. These precautions paid off, as the power plant came through the ordeal of salt water flying none the worse for its experience.

We would like to hear from readers who build this model as to their results, and will be pleased to answer any questions regarding it.

Model planes are described for television audience over station WLW, Cincinnati. (L to R) Jim Nielander, Milton Spector, Warner Stewart, M. C. Paul Jones. Hobby programs are arranged by Carl Doll of X-L Hobby Shop

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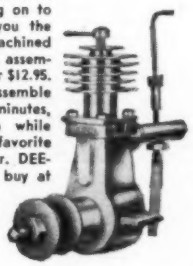

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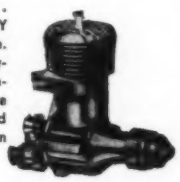

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RECOMMENDED DEEZIL PLANES

*Jr. Whirlwind	$2.95
*Perky	2.00
*Baby V Shark	2.95
*Cadet	3.95
*Zing	4.95
*Baby Miss Behave	2.95
Coronet	2.50
Buccaneer 48	3.50
American Ace	1.50
Skyrocket	2.95

*U-Control

RECOMMENDED PACEMAKER PLANES

*Fireball	$ 7.95
*Formacraft	12.50
*Beechcraft	9.95
*Super Bipe	4.95
*Speedwagon	4.95
*Super Zilch	4.95
Stinson Reliant	17.50
Piper Cub	10.95
Buccaneer C Special	6.95
9' Taylorcraft	17.50

*U control

RECOMMENDED BOATS FOR DEEZIL AND PACEMAKER

Buckeye	$ 4.95
Sea Bird	8.50
Marlin	8.50
Reuhl	15.00
O-Gee	10.90

RECOMMENDED DEEZIL RACE CARS

Thimble Drone	$ 3.95
Reuhl	24.95
Thimble Drone, complete with Cox engine	19.95

RECOMMENED PACEMAKER RACE CARS

Pacemaker Race Car	$55.00
McCoy Hot Rod	42.50
McCoy Invader	42.50
McCoy Proto	42.50
Dooling	45.00

IMPORTANT

These wonderful values are going like hot cakes. Order today for immediate service. 24 HOUR SHIPMENT SERVICE. If you want ANYTHING advertised in this magazine and you want it in a HURRY and at the LOWEST POSSIBLE PRICE, order it from GOTHAM.

We've got everything and guarantee 24 HOUR SHIPMENT

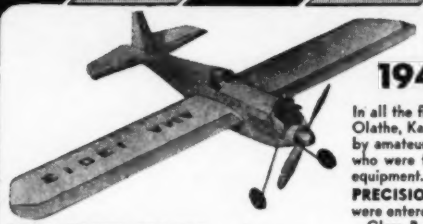
HOW TO ORDER

It's easy. Just write down what you want and the price and send a money order or check, or send only $1.00 and we'll ship C.O.D. for the balance. Don't forget, add 15c for postage. It's easy! It's quick! Order now!

GOTHAM'S GOT 'EM AND GUARANTEE'S THEY'RE GOOD!

GOTHAM HOBBY CO., 107 East 126th St., New York 35, N. Y.

Clean Sweep for Berkeley!



AT 1948 NATIONALS!

In all the flying catagories Berkeley topped the field at Olathe, Kansas. Many of the winning models were flown by amateur kit builders, against a field of professionals who were flying with special custom built engines and equipment.

PRECISION STUNT CONTROL LINE: "Zilches" were entered in Class B and D only. Finished as follows:
Class B — 1st and 3rd Place Open
Class B — 1st Place Junior
Class D — 2nd Place Open
Class D — 2nd Place Junior
High Point—Open Champion, All Classes Combined.

RUBBER POWERED FLYING SCALE: First Place — Stinson L-5 "Sentinel" Kit Model. (Amazed the experts with 35 minute "test" flight earlier in day.)

FREE FLIGHT GAS: No firsts, but plenty of places scored by "Powerhouse" kit models.

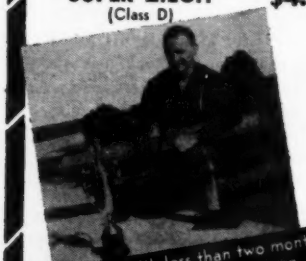
RADIO CONTROL: Two places by "Buccaneers," one by a modified "Custom Cavalier," one by a "Musketeer-54."

RISE OFF WATER: Berkeley "Gondolier" Floats used by many winners.

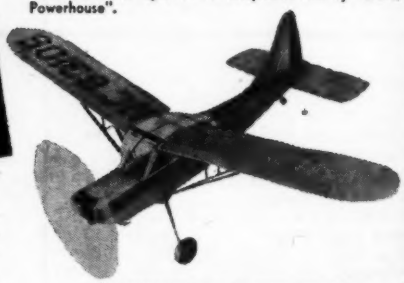
SCALE CONTROL LINE: P-51 "Mustang" placed second in Senior Class.

CO-2 EVENT: Eight out of ten places won by "CO-2 Powerhouse".

"PEE WEE" ZILCH (Class A) **$2.50**
"LIL" ZILCH (Class B) **$2.95**
"SUPER ZILCH" (Class D) **$4.95**



Paul Bender with less than two months' experience in stunt flying, won the Columbus, Ohio Meet with his "Super Zilch" on its tenth flight. Two weeks later, he won the Ohio State Championships with the same model, on its 17th flight!



STINSON L-5 "SENTINEL"
Rubber Powered Kit **$1.50**

PHILADELPHIA FLYING FAIR: Powerhouse takes 2 firsts and 2 seconds in Free Flight Gas.
SCRIPPS-HOWARD MEET: CO-2 Powerhouse wins first thru eighth place.
NATIONAL AIRPORT (WASHINGTON, D. C.) MEET: "Squirt" takes 1st and 2nd places in Jet Speed.
NEW AMA RECORDS: Powerhouse sets Senior Record for CO-2 Flying.
Sinbad "40" sets new National Junior Tow-line Glider Record.

These results, and hundreds of similar records throughout the country prove that a Berkeley design must be your next choice.

FLASH!
POWERHOUSE, SQUIRT & ZILCH
WINNERS AT THE
PLYMOUTH MEET, TOO!

CO-2 POWERHOUSE
Kit **$1.50**

FOR THE COMPLETE STORY-

Forty big pages of kits, engines, accessories and supplies. Plus twelve pages of condensed model building and flying data that nobody should be without. Learn about all the latest designs of Champions like Dick Korda, Jim Saffig, and Henry Struck.

See The BERKELEY CATALOG WITH 1949 PREVIEWS

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No responsibility assumed for any omission or error.

November 1948
MODEL AIRPLANE NEWS

ATWOOD ENGINES WIN 4 FLIGHT CLASSES AT NATIONALS

MAKE CLEAN SWEEP AT OLATHE, KANSAS MEET

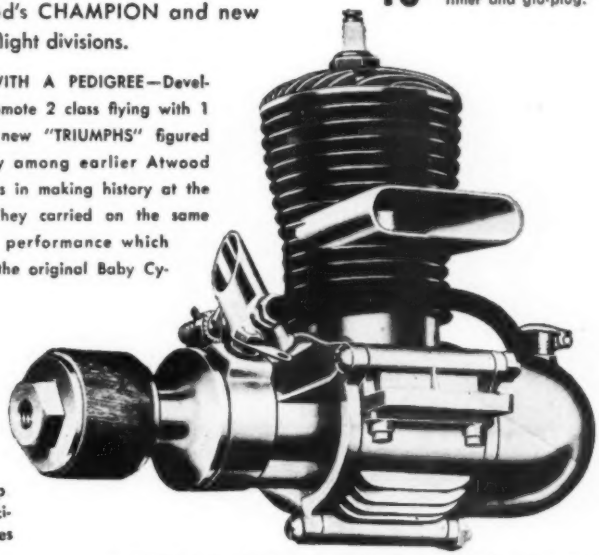
The brilliant record-making work at the 17th Annual National Model Airplane Meet—Aug. 3rd-8th—marked outstanding triumphs for Bill Atwood's CHAMPION and new "TRIUMPH" engines Top honors were won in the 4 major flight divisions.

DAVE SLAGLE, Glendale, Calif., won the national stunt championship This is second year Slagle has taken the trophy for novelty and precision work, flying Atwood engines equipped with 2-speed timers.

TRIUMPH WITH A PEDIGREE—Developed to promote 2 class flying with 1 plane, the new "TRIUMPHS" figured prominently among earlier Atwood power plants in making history at the Nationals. They carried on the same top-calibre performance which stems from the original Baby Cyclone.

"TRIUMPH '49"

$18.00 for TRIUMPH '49 or '51. Complete, less timer and glo-plug.



"TRIUMPH '51"

$20.00 for TRIUMPH '49 or '51. Complete, with timer and spark plug

BOB HOLLAND, Sunland, Calif., high point champ for all-'round flying. New TRIUMPH '49 and '51 helped boost point ratings. Holland repeated performance at following Plymouth meet in Detroit.

DON NEWBERGER, Long Beach, Calif., competing against the hottest models in the nation, won the class "C" speed event. His Special "TRIUMPH '49" turned in 136.24 M.P.H.

DAVE REBER, Muncie, Indiana, carried away highest time honors, using Atwood Champion powered model. His class "D" free flight record ticked-off 1184.2 seconds.

ENGINES INDIVIDUALLY RUN-IN AND CHECKED WITH ELECTRIC TACHOMETERS.

Every Atwood Engine Fully Tested, Fully Guaranteed.

CONSULT YOUR DEALER TODAY

ATWOOD MANUFACTURING COMPANY

147 Pasadena Avenue • South Pasadena, California

2 Valuable Tools for Racing Fans

New O & R GLOW PLUG

This cutaway shows you why O & R Glow Plugs are outstanding in their performance. The O & R Glow Plug features all steel construction, with mica insulation, permanently rolled, sealed to insure extreme durability. The platinum filament is held to exacting tolerances in diameter, coil spacing, and over-all length, welded to the insulated electrode and the main body, insuring perfect contact and interchangeable performance.

STANDARD GLOW PLUG—for O & R and other Standard type engines when used with Ohlsson & Rice No. 2 or 4 Fuels.....85c ea.

SPECIAL SPEED PLUG—for ring-type racing engines when used with Ohlsson & Rice 30 Plus Nitrated Blending Agent. Easily identified by the cooling fins on the electrode.....85c ea.

When you buy any O & R product your satisfaction is guaranteed by the experience of hundreds of thousands of modelers throughout the world.

O & R's continuous engineering and research program has recently produced the completely engineered Pow-OR-Team of matched engine, fuel, glow plug and propeller, the most outstanding advance in years in power efficiency.

Now O & R offers the first of two carefully engineered accessories for the racing fraternity—also to be used in conjunction with each other: the New Special Speed Plug and the New 30 Plus Nitrated Blending Agent.

FLASH—17th ANNUAL "NATIONALS"
OLATHE, KANSAS

WALLY WALLICH wins National Class D Speed Championship at 153.85 m.p.h. using "30 Plus" and O & R Glow Plug. Wallich says: "On arrival in Kansas, we found conditions considerably different from those in California, but by blending our own formula using Ohlsson & Rice 30 Plus right on the field we were able to get the exact mixture required for best performance."

POW OR TEAM
Standard of the Model World
at Model Dealers everywhere

PARKER HUBERT, JR. wins Class D Senior Speed Event using Ohlsson & Rice Fuel No. 4.

BILL LAKE wins Class A Senior Stunt Event with new Ohlsson & Rice 19 Rotary Valve Engine and No. 2 Fuel and Glow Plug.

JIM WALKER takes First Place in Radio Control with O & R 60 Engine with Rotary Valve Conversion Unit.

New

30 *Plus* Nitrated Blending Agent

Now for the first time, by blending "30 Plus" with Ohlsson & Rice No. 3 Fuel you can bring your formula up to any percentage of Nitrated Material to insure absolute top performance under any and all conditions. You can obtain the proper heat balance for even the most extreme conditions. Use "30 Plus" to "tailor make" your fuel right on the spot by following the easy blending chart printed on each can. Blending only alters the Nitrated percentage, since "30 Plus" contains the same quantity of degummed castor oil as your No. 3 Fuel. Pts...$1.00 Qts...$1.75

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